the Skeptical Inquirer

DOES ASTROLOGY NEED TO BE TRUE?

First of a Two-Part Examination

Pennsylvania Demon-Haunting Case

Creationism Goes to Court

The Great East Coast UFO

Homing Abilities/Newman Energy Machine

Follow-up on Fringe Literature

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the Skeptical Inquirer

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ON THE COVER: Illustration by Ron Chironna ©1986.

News and Comment

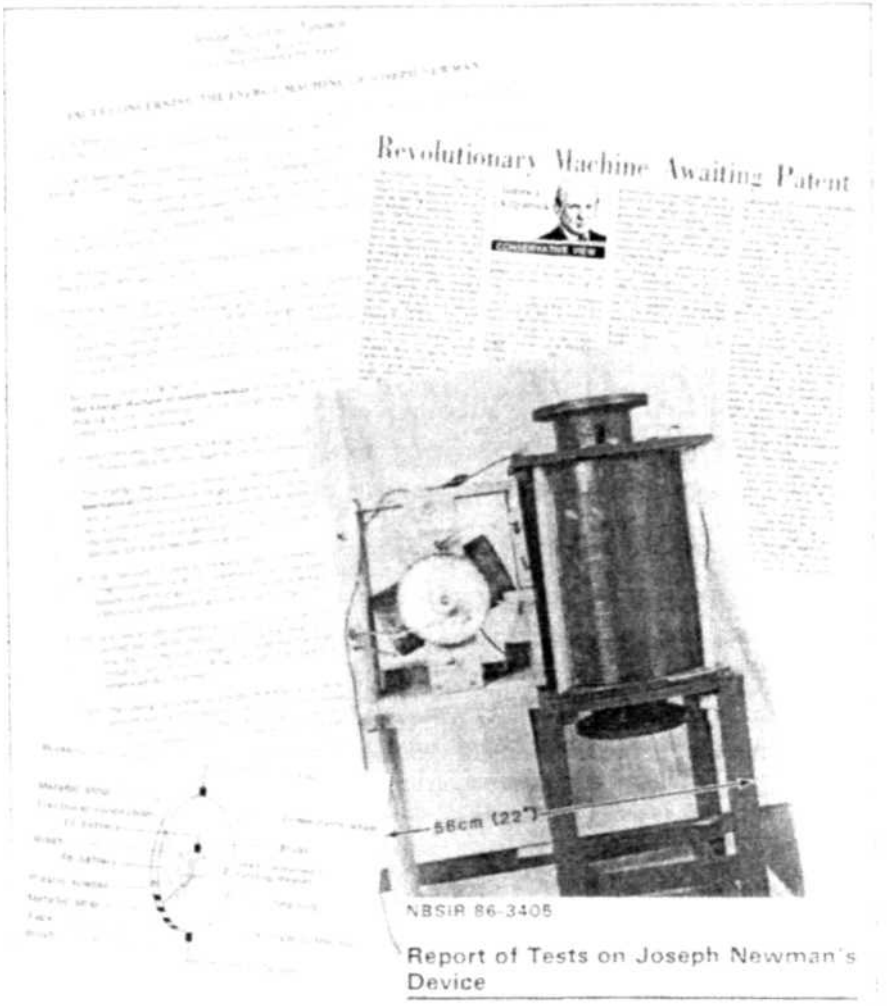
The Curious Case of Newman's Energy Machine: NBS Study Short-Circuits Revolutionary Claim

IT WAS the most prominent perpetual-motion case of the decade. Mississippi inventor Joseph Newman's "Energy Machine" had all the necessary characteristics: the claim to produce more energy than it consumed, support by vocal investors, testimonials from some scientists, attacks by its supporters on the close-minded scientific establishment, and a self-taught populist-style inventor willing and able to take his case directly to the public.

But it had still more: the refusal of the Patent Office to grant a patent, the claim of government censorship, well-publicized legal proceedings that included a suit against the Patent Office, and then an extraordinary endorsement by a former Commissioner of the U.S. Patent Office appointed as a Special Master by a Federal Court: "Evidence before the Patent and Trademark Office and this court is *overwhelming* that Newman has built and tested a prototype of his invention in which the output energy exceeds the external input energy. There is *no* contradictory factual evidence" (*Report* by Special Master William E. Schuyler).

Was this finally it? Had Newman indeed found a way to circumvent the laws of thermodynamics? Had the Holy Grail of all lonely inventors at last been found? Was this a solution to the world's energy needs? Maybe there was something here. The Newman Energy Machine had reached a status few such claimants had previously attained. Newspapers and science magazines reported on the continuing controversy. Newman, with the help of a public-relations firm, was a frequent guest on national television talk-shows. James J. Kilpatrick wrote a highly sympathetic syndicated column about Newman and his device.

The claims were nothing short of revolutionary. This statement, announcing a news conference and demonstration at the Capital Centre outside Washington in May 1985, was typical: "The ENERGY MACHINE produces 'greater *external* energy output than *external* energy input,' will replace *all* current forms of energy production, is safe, non-polluting, and will have a profound socio-economic impact upon our civilization." A fact sheet continued: "The energy machine will *totally decentralize* our access to energy. . . . Every consumer could make a one-



Newman's Energy Machine as delivered to the NBS, whose report contradicted claims by Newman and supporters.

time purchase of a unit that could be installed in one's backyard and virtually unplug themselves from the local utility companies. The energy machine could also be utilized to power all land, sea, and air vehicles. . . ." It was claimed that the machine represented a "mechanical unification of the gravitational, electromagnetic, and nuclear fields." It compared Newman to Michael Faraday, James Clerk Maxwell, and the Wright brothers, and said the machine would change the world "more so than any invention before this time."

Everything rested on the single claim. Did the machine in fact produce more energy than it took in (it uses a pack of 116 nine-volt batteries)? Federal District Judge Thomas P. Jackson ordered Newman to deliver his invention to the nation's chief testing lab, the National Bureau of Standards, to answer this fundamental question. Newman at first refused, but eventually capitulated. The

tests were carried out from March to June 1986 by three NBS staff members led by NBS Supervisory Physicist Robert E. Hebner.

Since the device was not a standard piece of equipment, NBS needed to design a special test plan and put together and calibrate a variety of measurement devices. This was necessary to conduct the tests and ensure the results were accurate and reliable. All the measurement devices were of conventional and well-documented instrumentation. But the instrumentation is specialized and therefore is not found in most research laboratories.

Hebner and colleagues Gerard Stenbakken and David Hillhouse ran a series of extensive measurements of both the energy input and the energy output of Newman's device. The measurements were made both separately and simultaneously and by several different instruments and methods to ensure that they were appropriate to the sharp-spiked electrical output of Newman's device. All instruments were calibrated in advance. Separate checks were made to ensure that all the data were consistent and valid.

The results weren't what Newman and his supporters wanted.

"At all conditions tested, the input power exceeded the output power. That is, the device did not deliver more energy than it used." In no case did the machine's efficiency—the ratio of output power to input power—even approach 100 percent (the efficiencies in fact ranged from 27 to 67 percent).

Why the difference between these results and some of those reported earlier? Although this study did not examine other, previous testing procedures, the NBS report emphasized that "the [NBS] tests adhered to the strictest standards for making accurate and reliable measurements."

Could the device still be useful? NBS did not look at that question, but repeated that the device did not provide more energy than it used.

NBS Director Ernest Ambler noted that the results are "clear and unequivocal." He added: "It is also clear that our test results are entirely consistent with well-established laws of physics. NBS can think of no way that this or any other device could be constructed or operated to violate either the principle of conservation of energy or the Second Law of Thermodynamics."

These results got immediate and widespread attention.

To most scientific minds, the case would appear to be closed. The NBS is highly respected for the quality of its measurement science. As might be expected, however, Newman said he did not accept the results. "It's just another example of the injustice I'm fighting against." His lawyer claimed NBS could not be considered an impartial testing laboratory. Other supporters claimed the NBS may have failed to account properly for the mechanical energy generated. Further legal action is virtually certain. The last act of this curious episode is undoubtedly yet to be played.

—Kendrick Frazier

Survey Examines Level of Scientific Illiteracy in U.S.

FOLLOWING UP on his earlier survey of technological illiteracy, reported in our Summer issue (News & Comment, p. 296), Jon D. Miller of Northern Illinois University has issued some new and valuable measures of *scientific* illiteracy.

The data come from the same national survey of 2,000 American adults from which the measures of technological illiteracy were obtained. The survey, sponsored by a grant from the Science Indicators Unit of the National Science Foundation, was conducted by telephone in late 1985 by the NIU's Public Opinion

TABLE 1

Readership of Astrology Reports

	Read Astrology Reports		
	Often	Sometimes	Never
	%	%	%
All adults (N = 1,936)	15	52	33
Gender			
Female	17	58	25
Male	14	46	41
Education			
High school dropout	20	44	36
High school graduate	16	54	30
AA graduate	13	55	33
BA graduate	11	55	34
Graduate degree	14	50	37

TABLE 2

Belief That Astrology Is Scientific

	Believe That Astrology Is:		
	Very Scientific	Sort of Scientific	Not at All Scientific
	%	%	%
All adults (N = 1,992)	7	29	61
Gender			
Female	8	31	57
Male	7	26	64
Education			
High school dropout	14	37	43
High school graduate	8	29	59
AA graduate	4	26	67
BA graduate	4	25	68
Graduate degree	1	22	75

Laboratory, which Miller directs.

A key part of the study was to examine the ability of citizens to distinguish between science and pseudoscience. As one simple measure, Miller chose the extent of belief in and use of astrology reports.

Not surprisingly, the data indicate that almost two-thirds of American adults read astrology reports periodically and 15 percent (or about 26 million adults) read them often (Table 1). Women are

TABLE 3

Behavior Changes Due to Astrology Reports

	Have Changed Plans Due to Astrology Reports %
All adults (N = 1,936)	7
Gender	
Female	8
Male	6
Education	
High school dropout	20
High school graduate	6
AA graduate	4
BA graduate	2
Graduate degree	4

more frequent readers than men. All educational groups were equally likely to read astrology reports at least occasionally, but the least educated respondents were significantly more likely to read them frequently.

Two more questions probed deeper into the public's conception of astrology. The respondents were asked how scientific they believed astrology to be. As Miller reported to the American Association for the Advancement of Science meeting in Pittsburgh, "It is important to distinguish between those people who read astrology reports for entertainment and those who think that they definitely are or might be true." The study found that 61 percent of American adults rejected astrology as "not at all scientific" but a full 39 percent (66 million adults) gave some credibility to astrology reports (Table 2).

The study found a strong association between the level of formal education and belief in astrology. A majority of those who did not finish high school thought that astrology was credible. So did 37 percent of high school graduates. Two-

TABLE 4

Acceptance of Evolution

	"Human beings as we know them today developed from earlier species of animals."		
	Agree %	Not Sure %	Disagree %
All adults (N = 1,992)	47	7	46
Gender			
Female	41	8	51
Male	53	6	41
Education			
High school dropout	38	8	54
High school graduate	39	8	53
AA graduate	49	8	43
BA graduate	63	5	32
Graduate degree	71	5	25

thirds of college graduates rejected any scientific basis for astrology.

A third question asked whether the person had altered behavior as a result of astrology reports. The study found that about 7 percent of Americans (12 million adults) had changed some of their behaviors because of astrological advice. Again the impact was strongest among the least educated (Table 3).

"In summary," says Miller, "a substantial minority of Americans appear to have some difficulty in distinguishing between science and pseudoscience."

In another part of the survey, respondents were asked about evolution. It was included as one of the major scientific paradigms of the day about which attitudes were measured. "The concept of evolution," Miller noted, "is more widely known than accepted." The study asked each respondent to agree or disagree with the statement that "human beings as we know them today developed from earlier species of animals," something on which virtually all biological scientists do agree.

Says Miller, "Sixty years after the Scopes trial, the American people are still almost equally divided on this question, with 47 percent agreeing and 46 disagreeing with the statement (Table 4). Men were more likely to agree with evolution than were women. Education levels were also telling. A majority of high school dropouts and high school graduates rejected the idea of evolution; two-thirds of college graduates accepted it.

In contrast to results about the concept of evolution, acceptance of plate tectonics, a subject that seemingly poses no threat to anyone's religious views or personal values, was overwhelming. Eighty-one percent of all respondents agreed that "the continents on which we live have been moving their location for millions of years and will continue to move in the future."

—*K.F.*

Shakeout of Science Magazines: Science and Public the Losers

THE DEMISE of *Science 86* and *Science Digest* is a blow to all who care about the public understanding of science, science education, and the popular acceptance of fringe-science.

Science 86 in particular had been forthright in presenting science in an interesting yet accurate way and eschewing all pseudoscience. It had published critical inquiries of questionable topics and had widely disseminated to schools a special section on creationism and evolution. *Science Digest* had in the past few years matured into a responsible science magazine, rising above the uneven dabbling with the paranormal that marked many of its issues in the early 1980s (see "Where Are the Editors?" *SI*, Winter 1980-81). It conveyed the beauty and fascination of science to a wide audience.

Discover and its publisher, Time Inc., purchased the mailing lists of both *Science 86* and *Science Digest*. This was an aggressive move to strengthen *Discover*'s own chance to survive. All three magazines had suffered dramatic drops in advertising revenue in the past two years. *Discover*, too, has published critical investigations of fringe-science claims, notably of creationism. Two years ago,

however, *Discover* discontinued its innovative "Skeptical Eye" column, a forum for many revelations, including the first disclosure of James Randi's Project Alpha. Ironically, this came shortly after CSICOP chose Leon Jaroff, "Skeptical Eye" 's architect and then managing editor of *Discover,* to receive CSICOP's 1984 Responsibility in Journalism Award (*SI,* Spring 1985). In the past year, *Discover* has been moving away from the hard sciences and is becoming more a general magazine that deals with topics and issues that have a scientific or technological aspect.

In the meantime *Science News,* which never went the route of high gloss and never depended on advertising revenue, continues to present responsible, well-written scientific information to the public on a weekly basis, as does its larger British counterpart, *New Scientist.* Both are thriving. *Omni* continues to present its maddeningly uneven mix of science, fringe science, and science fiction, while *Scientific American,* staid but respected science educator of the intelligent layman, has entered a period of uncertainty under new ownership by a German publisher.

The science-magazine scene has been shaken severely. The brief Golden Age of the early to mid-1980s is no more.

—*K.F.*

Bent Spoons Turn to Gold for Uri Geller

SCHOLARS LONG ago acknowledged that Uri Geller never had the psychic abilities for which he once was so widely touted. Magicians showed how he does all his tricks. Psychologists explained how he and other "psychics" manipulate perceptions and expectations to make you *think* they have special mental powers. Geller declined all challenges to subject himself to controlled tests. He refused to perform in the presence of a knowledgeable magician. Academics and scientists no longer take him seriously.

Does that mean that the onetime Israeli magician and boy wonder of the international psychic circuit has disappeared into obscurity? Is he a penniless wanderer, relegated to bending spoons in carnival shows? Hardly.

"Today Uri Geller is a millionaire several times over," reports the *Financial Times* of London. In a revealing report on the business side of Geller's psychic trade, the newspaper shows how Geller amassed a fortune and how he's adding to it regularly.

A mining company magnate and amateur dowser, the late Sir Val Duncan suggested to Geller in 1974 that psychic powers could be used to earn millions. He encouraged Geller to work with maps and by passing his hands over them "identify areas which gave off a sort of pressure" and thereby "divine" the presence of minerals.

So Geller went into the psychic-mining business. He claims to help mining and minerals-exploration companies find deposits. He learned to be businesslike. These days, reports the *Financial Times,* Geller charges a standard fee of £1 million, as an advance against royalties.

He charges more in areas he considers physically dangerous. Sometimes he charges less.

Geller claims big successes in eleven projects he's undertaken in the past ten years. Three or four were "total failures," and the rest were supposedly partially successful, where royalties were insufficient to cover the advance. More details of his story are promised in a forthcoming book by Geller.

"But is it true?" the newspaper asks of Geller's story. "Independent corroboration is hard to come by." It notes that those who employ him "may find it easier to 'lose' his fee in the exploration budget than to explain it to board members and shareholders."

One mining executive who has come forth is Peter Sterling, chairman of Zanex, an Australian minerals and exploration company. *The Skeptic,* newsletter of the Australian Skeptics, the Australian branch of CSICOP, reports that Zanex paid Geller $250,000 for his advance on where to look for gold in the Solomon Islands and near Maldon in Australia. He was also granted an option to take up to 1,250,000 Zanex shares at 20 cents each by June 5, 1987.

Geller was flown over the Solomon Islands. He told Zanex to look for diamonds. Samples were taken, and Sterling said the results were "encouraging." Kimberlite rock and minerals associated with diamonds were found there. Sterling doesn't say whether diamonds were found, or whether deposits Geller identified were already known. Sterling, according to the *Financial Times,* is well pleased with his investment in Geller but says it hasn't been easy explaining it to his board and shareholders.

Geller was also taken to Maldon, an old gold-mining town in central Victoria, where he had long discussions with a Zanex geologist. *The Skeptic* says it is believed Geller did not reveal anything about the area not already well known by geologists.

Sterling tells reporters he has no idea how "it works"—while never providing a persuasive case that it does work—but says he thinks in 20 to 30 years "science will know, and will be building machines to do the same thing."

The *Financial Times* report includes a statement that may be more telling than the reporter seemed to realize: "He [Geller] likes to work with geologists; *the more feedback they provide* [emphasis added], the more chance he has of interpreting the forces he picks up."

The business has been lucrative. "There is no doubt that Geller is extremely rich, living at the moment in two very grand apartments overlooking one of London's loveliest parks," says the *Financial Times.* "One is for his family, the other is his office. There are other homes in other countries."

The newspaper also reports that skeptics' attempts to discredit Geller have hurt and discouraged him in the past, "but these days, so long as mining magnates continue to find him cost-effective, [he] does not much care what the skeptics say."

His next project? Geller says he plans to find Lasseter's Reef, which the newspaper describes as "a legendary golden mountain that is to Australia what the lost city of Atlantis is to the rest of the world."

The Skeptic concludes its report: "Uri Geller has no qualifications as a geologist but is a talented magician with a reputation for being able to convince people he has psychic powers."

—Kendrick Frazier

Chernobyl Predicted by Bible? There's a Worm in This Wood

THE CHERNOBYL nuclear power plant disaster in the Soviet Union was predicted in the Book of Revelation. If you haven't heard this astonishing

claim yet, you undoubtedly will in the future. It's just the type of amazing post hoc interpretation that carries enormous anecdotal weight with much of the public.

Well, what about it? Maurice Ogden, minister of the Unitarian Church of Orange County in Anaheim, California, looked into the actual facts. He shared them with the SKEPTICAL INQUIRER.

A friend called Ogden "in considerable excitement" to announce that a column in the *Los Angeles Herald-Examiner* (Joe Scott, August 6, 1986, p. A3) "proved that the Chernobyl disaster was predicted in the Book of Revelation." Ogden says his first thought was that this news, if true, should have been heralded worldwide, "since Revelation was a poetic exhortation written near the end of the first century urging the churches of Asia Minor to hold the faith and resist worship of the Roman emperor, and can be made to relate to later events only by the most violent and fanciful distortions of language.

"Eager for knowledge, I turned to the column and discovered that, sure enough, Scott quoted *New York Times* reporter Serge Schmemann who, in turn, quoted 'a prominent Russian writer, an atheist,' who had called his attention to Rev. 8:10-11, relating a vision of a 'great star . . . called Wormwood' that fell and poisoned one-third of the waters of the world—not a very accurate description of the Chernobyl disaster, unless there is a hidden meaning, which Scott says 'becomes chillingly clear when one realizes that the Ukrainian word for wormwood . . . is *chernobyl*.' "

The *New York Times* report said such an apocalyptic reference to a star called Wormwood has given Chernobyl "the quality of almost a supernatural disaster" in the eyes of many Russians.

"Being of a naturally suspicious nature—and since my Ukrainian is no better today than it once was—I asked several linguists and checked through a half-dozen references, from which I gleaned the following intelligence: (1) There is considerable similarity between the Russian and Ukrainian words involved. (2) The word *chernobyl* is a transliteration which is usually translated 'black place,' from the Russian 'chernyi: black.' (3) 'Wormwood' is 'polyn.' 'Worm' is 'cherv.'

" 'Cherv' is superficially similar to 'chernyi,' but no more related, I am told," says Ogden, "than the French words 'merci' and 'merde.' "

—*K.F.*

Monsters in Seattle? It's Not a Croc

THE PACIFIC Northwest has experienced much hoopla about Bigfoot, an allegedly humanoid creature of the Cascade Mountains that has, so far, eluded capture by man. In spite of the region's heritage of Bigfoot and the presence of numerous bodies of water, the area has failed to produce an aquatic monster like Lake Champlain's Champie or Chesapeake Bay's Chessie. All this seemed about to change when a number of alligator sightings were made in a lake within the city limits of Seattle.

Although alligators are native to the United States, they are seldom found north of Louisiana, and never at the 48° latitude of Seattle's tiny Green Lake. Even summer temperatures in Washington State are not high enough for these

Seattle Times, June 5, 1986

News story about Wechsler's capture of the caimans.

reptiles. A search by Parks Department employees found nothing and the public was advised that it was safe to use the lake. The local media in the meantime had a lot of fun with the story. One newspaper article was headlined "It's A Crock," while a disk-jockey announced a "Gator-Aid" concert to benefit the creatures.

A day after the official search a science teacher made another sighting. Others confirmed the teacher's observations and concurred that the creatures were indeed large. The hunt was on again.

Less than a week after the first sighting, area resident Doug Wechsler managed to end the mini-sensation by catching two Central American caimans. Caimans closely resemble both alligators and crocodiles, except that they are much smaller. The larger of the two creatures apprehended did not exceed two and a half feet in length. Earlier warnings from the Parks Department that caimans might be a danger to small dogs seemed unfounded, especially when it was learned that one of the two was near death when captured and the other had a skin disorder from the cool summer nights. Wechsler, incidentally, caught the little creatures with his bare hands.

Surprisingly few skeptics came out to call the sightings spurious. Perhaps the reason for constraint on the part of gator doubters was a similarly unlikely report a few years ago of a cougar in a Seattle park. In that case, the Parks Department people managed to bag a full-size (95 lbs.) puma with the aid of a tranquilizer gun. Dubbed "D. B. Cougar" by the media (after the Northwest air-bandit D. B. Cooper, who was the first to kidnap an airline and then parachute out of the plane with the ransom, never to be found

or caught), the mountain lion was eventually relocated to the northern Cascades.

How the caimans or the cougar got to Seattle, no one knows. But both incidents were instructive for skeptics. In each case eyewitnesses had provided accurate information under generally difficult conditions. The caiman caper, however, produced some significantly exaggerated reports of the size of the creatures. For those who would like to believe in extraordinary animals, another message is present. The two instances demonstrated that the existence of a real creature was positively confirmed within days of the first sighting.

—*Michael R. Dennett*

Michael Dennett, who lives in the Seattle area, writes frequently for the SKEPTICAL INQUIRER.

Astronomers Warn Of Star-Naming Scam

AS VALENTINE'S Day approaches, we can expect again this year to see and hear a number of ads by companies who offer to name a star according to the wishes of any person who pays a fee. Astronomers warn consumers that the names assigned by these companies have no validity in the scientific community.

By long-standing international agreement, the naming of astronomical bodies is done by the International Astronomical Union, the worldwide federation of professional astronomy societies. Under no circumstances is a fee ever charged by anyone involved in its decisions. No professional or amateur astronomer and no legitimate reference work would recognize a name assigned to a celestial object that is *not* approved by the IAU.

The organizations that sell star names offer a certificate indicating that a star has been designated as the purchaser wishes. The Astronomical Society of the Pacific warns that "anyone who sends money to such an organization might do as well throwing the fee down a black hole in space."

The following illuminating case study was reported to the SKEPTICAL INQUIRER by Ruth F. Rosevear of Cincinnati, Ohio:

"We should have been proud, but we weren't. Someone paid probably $35 to ask the International Star Registry to name a star for my husband and me. We are supposed to study the constellation of Perseus and point to 'our' star. A colorful oversized certificate gave the star's position and proclaimed: 'This star will henceforth be known by this name [ours] permanently filed in our Swiss vault and recorded in a book which will be registered to the copyright office of the Library of Congress in the United States of America.' A star map with our star ringed in red came, too.

"My husband is an amateur astronomer, and he took the certificate and the star map to the University of Cincinnati Observatory. The star map was a copy of Chart II in Becvar's *Atlas of the Heavens*, but our star wasn't on the original. He used its position to find the star in a star catalog and found it was too faint to appear, though it does exist at 8.9 magnitude. Only a telescope would spot it.

"This intrigued the Observatory director and together they looked through a lens. The 'star' inside the red ring was an inkspot. It had furry edges that gave it away since all other stars had firm, smooth rings. Its position was almost accurate, as if someone had used a standard grid to place it."

Rosevear points out that the April 1985 *Sky & Telescope* reported that the copyright application was rejected by the Library of Congress. It's estimated that since 1979 possibly 100,000 people have paid to have a star named for them. "They have been misled to think they have a star when it won't ever exist in

their name except in the files of a questionable company," she said. Several other firms are "selling" stars with false claims to a copyright.

Concludes Rosevear: "The International Astronomical Union is unhappy about this and reminds its members that it is 'the recognized prerogative of the IAU to assign names and systems of nomenclature to astronomical bodies.' Members are requested to 'do all in their power to discourage popular interest' in this 'deplorable commercial trick.' The IAU noted that it had been requested to intervene to stop this swindle."

—*K.F.*

From the Editor

We begin publication in this issue of Geoffrey Dean's two-part "Does Astrology Need to Be True?" a comprehensive investigation of the claims of *serious* astrology as defined by "serious" astrologers. Although we are striving for shorter articles, so that we can cover a wider range of interests, we publish this lengthy inquiry because of its special significance. As one of our reviewers of Dean's manuscript wrote, "It is without doubt the best article on astrology that I have ever seen."

Bleeding Statue Update

WE LAST LEFT the case of the bleeding statue of the Virgin Mary in Ste.-Marthe near Montreal with disclosure that the whole thing had been a hoax (Summer 1986, p. 295). The latest development is a judgment of the Superior Court (the Hon. Jules Beauregard) requiring Mr. and Mrs. Maurice Girouard, in whose home the statue was located, "to cease announcing publicly that the sweating of the statues found in their residence constitutes supernatural phenomena."

Bok Memorial Fund

A SPECIAL endowment fund to carry on the work of the late Professor Bart Bok in sharing the excitement of modern astronomy with the public has been created by the Astronomical Society of the Pacific. "When Professor Bok passed away," notes the ASP, "modern science lost one of its most effective advocates and spokesmen." Gifts will support a variety of educational programs and projects for teachers, students, and the public. Donations or requests for further information should be directed to: Bart Bok Fund, ASP, 1290 24th Ave., San Francisco, CA 94122.

Flat Earth Follies

THERE REALLY *are* literate people who still believe that the sun revolves around the earth. This claim is argued in an article in the April 1986 issue of the *Baptist Bulletin,* organ of the General Association of Regular Baptists, one of the most determinedly fundamentalist of church groups. An editorial note stated that, while not endorsing the article, the *Bulletin* published it to encourage thought and discussion. It succeeded, for the June issue carried a number of letters, starting with some highly sophisticated criticisms, but ending with this rousing endorsement:

> How thankful we are for informed and courageous scholars like Gerardus D. Bouw who will speak out against the pernicious effects of Copernican heresy and expose the humanistic conspiracy

that threatens to subvert the precious minds of our children.

I was impressed by the depth of scholarship that must confound Godless pseudo-intellectuals, purveyors of every scientific "fad" that rolls across the sea of doubt.

Loo Flirpa
Scio Inst. of Technology
Scio, Oregon

Evidently, it occurred to no one in the editorial office to try reading the signature backward.

In Brief

CSICOP SCIENTIFIC Consultant Donald Goldsmith, who holds both a doctorate in astronomy and a law degree from Berkeley, is the 1986 scientist winner of the American Institute of Physics Science-Writing Award in Physics and Astronomy for his book *Nemesis: The Death Star.* It examines the lively scientific controversy over periodic mass extinctions on earth and their possible connection with the periodic entry into our solar system of a small, dim star.

* * * * *

Ronnie Hastings, active in the Dallas Society to Oppose Pseudoscience (D-STOP), has been named "Outstanding Secondary School Science Teacher of 1986" by the Texas A&M Chapter of the Society of Sigma Xi. He was cited for his work on the issue of the Paluxy fossil footprints (*Creation/Evolution,* 6, no. 1; see also *SI,* Spring 1983).

—*K.F.*

CSICOP Speakers Panel

CSICOP frequently receives requests for speakers from the media, educational institutions, and community and service groups.

We would like to compile a list of potential speakers. If you are available for general talks on the paranormal and pseudoscience or talks on specific subjects, we would appreciate it if you would let us know.

The SKEPTICAL INQUIRER is now sent to subscribers in 52 countries. Many of these countries have formal and informal groups of skeptics and would appreciate meetings with skeptics from other countries and having them address their groups. They may be able to arrange media coverage and assist with sightseeing, and so on. If you have an international trip planned and spare time, we suggest you contact the groups in the areas you will be visiting.

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MARTIN GARDNER

Notes of a Fringe-Watcher

The EPR Paradox and Rupert Sheldrake

I HAVE an impression that most parapsychologists around the world—I don't know about those in the Soviet Union—have given up the notion that psi phenomena can be explained by any known force of nature. At any rate, the fashionable trend in the United States and England is to conjecture that somehow the phenomena can be identified with a yet-to-be-discovered force-field that would also account for those paradoxes of quantum mechanics (QM) in which information seems to be transmitted either instantly or at a speed faster than light.

Many paradoxes in QM appear to require such a field, but none is more debated at the moment than the notorious EPR paradox. The letters refer to Einstein and two young colleagues, Boris Podolsky and Nathan Rosen. In 1935 the three published a paper in which they argued that QM was incomplete because it does not explain how two particles can remain "correlated" over vast distances without being causally connected.

The EPR paradox has numerous forms, but the easiest to explain is a version first proposed by physicist David Bohm. It involves a property of particles called "spin" because in some ways it resembles ordinary spin. Like a top, a particle can spin in either of two directions, usually called plus or minus, or up and down. Certain interactions produce a pair of particles that speed off in opposite directions. Regardless of how far apart they get, they remain correlated in the following way: If you measure one for spin, the other particle must have opposite spin.

At first thought you might suppose there is nothing more mysterious about this than tossing two frisbies in opposite directions and giving them opposite spins. But in QM a particle does not *have* a spin until it is measured. At the moment of measurement its wave function is said to "collapse" and nature decides by chance whether to give the particle a plus or a minus spin. If the other particle is, say, light-years away, the same wave-function collapse will give it an opposite spin. Put another way, the two particles remain a *single* quantum system with a single wave-function. To make matters worse, if the measured particle goes through a second detector and is measured a second time, it may have (with a probability of 0.5) a spin opposite to what it had before. If so, the other particle instantly changes *its* spin!

The question Einstein asked was this: How does the other particle "know" what

spin to acquire unless the two particles are in some manner causally connected? Einstein was a realist who took for granted that the universe has a mathematical structure independent of observing minds and that instant or faster-than-light "action at a distance" is ruled out by relativity theory. The correlation of the two particles, he argued, proves that QM is not the final word. A "little voice" inside him, he liked to say, told him that someday new parameters would be discovered that would explain the correlations without having to invoke what he derisively called "telepathy."

Physicists by and large were not troubled much about the paradox. It was no more than a curious "thought experiment" that could not at the time be verified. Then in 1964 physicist John S. Bell discovered what is called "Bell's theorem." The theorem provided for the first time a way of testing the EPR paradox in a laboratory. Many such tests have since been made, with even better ones now under way. The EPR paradox has been strongly confirmed, at least for short distances. It is possible that the two particles will lose their correlation at longer distances; but, if QM is correct, the correlation will never be lost as long as the particles continue to travel through space.

Working physicists today may still shrug and say: "So what? We knew it all along. That's just the way QM works." But the troubling question won't go away. What connects the particles? Bohm has always maintained, with Einstein, that QM is incomplete—that some type of field, on a level not yet explored, provides the "connectedness" that keeps the two particles in a single quantum system.

It is easy to see why so many parapsychicists have turned to QM for an explanation of ESP and psychokinesis (PK). (The leading theoretician of this approach is E. H. Walker, and the most productive experimenter is Helmut Schmidt.) Other fringe scientists are similarly turning to QM for support of unusual conjectures. A notable recent example is the British plant physiologist Rupert Sheldrake. In his book *A New Science of Life* (1981) Sheldrake defends the notion that there are "morphogenetic fields" (M-fields), not yet detected. They link every pattern in the universe, from particles to galaxies and human minds, with all other patterns of a similar type. These M-fields operate instantaneously—no energy is transmitted—on a subquantum level outside space and time. They give the universe the "wholeness" stressed by Bohm, by Eastern religions, and by such philosophers as Alfred North Whitehead.

Photo by Kathleen Thormod, *New Realities*, vol. 4, 1984

Sheldrake, maven of M-fields.

You must not think of Sheldrake's M-fields as fixed laws. They are created whenever a new pattern emerges in our evolving universe, and they change as the patterns change. For example, Sheldrake maintains that the first time a particular crystal is formed it can grow in different ways, but that once it forms, it creates an M-field that makes it easier for other crystals to grow the same way. All snowflakes are now hexagonal because countless snowflakes in the past have imposed that pattern strongly on their M-field.

The first time an organic compound is synthesized, its M-field makes it easier for other scientists to synthesize it.

How does an egg "know" how to become a chicken? It is following the pattern of its M-field. Behavior of animals, including humans, also creates and modifies M-fields. If you teach mice in Moscow how to run a maze, the M-field for that species makes it easier to teach mice in Paris how to run the same maze. The more often a poem is memorized, the easier it is for others to memorize it. "Within the present century," Sheldrake writes (p. 196), "it should have become progressively easier to learn to ride a bicycle, drive a car, play the piano, or use a typewriter, owing to the cumulative morphic resonance from the large number of people who have already acquired these skills." M-fields not only explain how quantum information gets around so fast, they also underlie such alleged phenomena as ESP, PK, and the Law of Karma. "Morphic resonance" also guides the evolution of life in ways that Sheldrake thinks Darwinian theory cannot explain.

Almost all scientists who have looked into Sheldrake's theory consider it balderdash. When his book was first published in England, an editorial in *Nature* called it "the best candidate for burning there has been for many years" and said it would be a waste of time and money to test its conjectures. On the other hand, some believers in psi have heralded Sheldrake's theory as a great leap forward.

Newsweek (July 7, 1986) reported on three winners of a contest sponsored by the Tarrytown Executive Conference Center, Tarrytown, New York, for tests of Sheldrake's theory. The $10,000 first prize was split between Gary Schwartz, a Yale psychologist, and Alan Pickering, of Hatfield Polytechnic, Hatfield, England. Schwartz showed three-letter Hebrew words, half of them real and half of them nonsense, to Yale students who knew no Hebrew. He claims that students did better than chance in recognizing the true words, presumably guided by the M-fields of all those today and in the past who have read Hebrew. Pickering did a similar test using real and nonsense words in Persian. The third winner, Arden Mahlberg, a clinical psychologist in Madison, Wisconsin, used true and nonsense words in Morse code. Sheldrake is quoted as saying he is delighted and encouraged by these results, but finds all of them "inconclusive." As he sensibly added: "With such a radical hypothesis, a larger weight of evidence is needed."

According to Michael Kernan, in his report on the Tarrytown awards ("Can We Learn from Learning of the Past?" *Washington Post*, July 11, 1986), Sheldrake "hopes to monitor the marketing of a new puzzle in England and to study how fast people learn to solve it." Kernan recalls the enormous popularity a few years ago of Rubik's Cube: "At first it was so hard to solve that people actually published books on the subject, but soon it became relatively easy to solve, and faded from sight." Did it occur to Kernan that it became easy to solve because so many books explained how to solve it?

Next year Random House is expected to publish Sheldrake's second book, *The Presence of the Past*. Kernan quotes Sheldrake's explanation of how a lost fingernail knows how to grow back to its original form: "Plato held that somewhere there was an eternal, archetypal fingernail. I say that the field is caused by actual fingernails of the past, a kind of pooled memory."

Back to EPR. No one has yet found a way that the spin correlation, or any other kind of correlation of two particles, can be used to send a message. If relativity is correct, no signal can be sent faster than light. When you measure the spin of a particle, nature makes it plus or minus with equal probability. No "hidden variables" dictate these choices. They are pure chance events. If you measure a stream of particles, their spins are like

random sequences of heads and tails.

Imagine a coin correlated in some mysterious way with another coin thousands of miles distant. At both locations the coins are flipped simultaneously. Each time this is repeated they fall with opposite sides up! It is not a bad model of the EPR paradox. Can such a strange correlation be used to send a message faster than light? The answer is obvious. Not unless you can influence one coin to make it fall heads or tails at will. Unfortunately, there is no known way to give a particle a desired spin when it is measured; and, if you could, the correlation with the other particle would contradict relativity theory.

So where do matters stand? It certainly can't be ruled out that a subquantum field, yet undiscovered, provides the connectedness that Bohm invokes to explain the EPR and other QM paradoxes. If such a field is ever found, it will turn out that Einstein was right after all in his famous clashes with Niels Bohr. QM *is* incomplete. It may be embedded in a deeper theory, similar to the way Newtonian physics is embedded in relativity theory.

David Mermin, a physicist at Cornell University, recently divided physicists into three classes with respect to their attitude toward the EPR:

1. Those who are troubled by it.
2. Those who are not troubled, but invent explanations that either are wrong or miss the point by doing no more than restate the formalism of QM.
3. Those who are not troubled, but refuse to say why.

The last position, Mermin added, "is unassailable." •

CSICOP Logo Competition

We are seeking a logo for CSICOP to use on its letterhead, publications, at conferences, etc. The design should be simple and able to be reproduced in black and white.

Three of the designs submitted in a similar logo competition sponsored by the Australian Skeptics are reproduced below as examples.

The successful design will win a bound set of back issues of the SKEPTICAL INQUIRER. Send entries to Logo Competition, CSICOP, Box 229, Buffalo, NY 14215, no later than June 30, 1987. The judges' decision will be final, and no correspondence will be entered into.

CSICOP Conferences on Audiotape

NEW! 1986 CSICOP Conference at the University of Colorado-Boulder (April 25-26): Science and Pseudoscience

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1984—Stanford University: Paranormal Beliefs—Scientific Facts and Fictions

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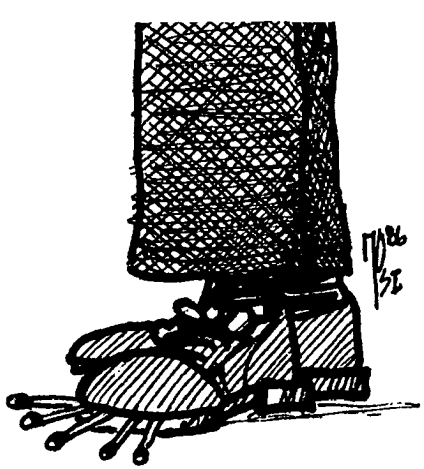
ROBERT SHEAFFER

Psychic Vibrations

THOSE AMONG you who still cling tenaciously to a materialist worldview may have thought that the initially puzzling phenomenon of *firewalking* was at least adequately explained in terms of the known laws of physics, especially after the publication of physicist Bernard J. Leikind's article (*SI*, Fall 1985). But firewalker Dennis Stillings was inflamed by such talk and gave a blistering refutation of Leikind et al. in *Fate* (February 1986). Stillings, who used to be a psychic metal-bender before he discovered firewalking, disparages Leikind's explanation as "ninth-grade general science," implying that science concepts taught at the high-school level must necessarily be false, the surprising truths being reserved for the professional *illuminati*. Further refutation of Leikind's explanation is that people *do* occasionally get burned; Stillings apparently thinks Leikind said that burning wood is incapable of harming the human foot, regardless of the quantity of heat or its duration. Burning with indignation, Stillings accuses Leikind of not bothering to investigate, of providing no data, and of indulging in "the kind of speculation of which a medieval theologian could only aspire." But he saves the cruelest blow for last: Citing the "excited and enthusiastic" state of mind of the participants at the Southern California Skeptics' firewalk, Stillings charges that "Leikind is a fire-walk instructor using the same basic principles of fire-walk preparation" as all the others, thereby enabling the mystical mind-over-matter magic to work.



* * * * *

Another researcher to take a recent pummeling in the pages of *Fate* is parapsychologist Susan Blackmore, who over a period of more than ten years slowly matured from a believer to a cautious skeptic. She failed to find evidence of ESP in numerous experiments, in spite of (or perhaps because of) careful experimental design and control. However, *Fate's* Consulting Editor D. Scott Rogo blames every parapsychologist's favorite bogeyman, the "experimenter effect," for

these negative results, in spite of her initial strong belief in such phenomena.

Rogo, a veritable Renaissance Man of the paranormal, observes that "in the course of my conversations with Blackmore I have come to suspect that she resists—at a deeply unconscious level—the idea that psychic phenomena exist." Her own writings betray this skepticism, says he, even though Blackmore doesn't realize this herself. He cites the instance of another parapsychologist, the late J. G. Pratt, who claimed never to have had a personal psychic experience until *after* seeing a display of supposed psychokinesis by Nina Kulagina, whose use of deception is obvious to almost everyone. Rogo concludes by saying that *"if* Blackmore is ever fortunate enough to witness a poltergeist or see some other striking display of psychic phenomena, I am willing to bet that her experimental results will be more positive."

* * * * *

Even if psychic powers can't always tell us the future, they can still be useful. A woman in Denver was recently excused from jury duty on the grounds that she was psychic and knew what the verdict was going to be. As reported by the Associated Press, Lynette Todd was excused as a juror in a trial for burglary when she said that she could not base her verdict solely on the evidence presented in court; she already *knew* whether the defendant was guilty. Without saying what the verdict would be, she wrote it on a piece of paper, placed it in an envelope, and gave it to the judge. When the envelope was opened after the verdict was delivered, it was found that she had indeed called it correctly: Guilty.

The possible use of psychic jurors opens up many new possibilities in jurisprudence, promising to clear out the backlog in the courts post haste. More exciting still is the possibility of using psychic judges, enabling us to do away with trials altogether; after all, the judge would *know* whether the defendant had done it!

* * * * *

We don't know why it is, but paranormal events just keep popping in California, making that state the undisputed leader of the creatively weird. For starters, Bigfoot is back, and he appears to be making his way southward. Typically a resident of the chilly forests of the Pacific Northwest, recent Sierra Nevada sightings suggest that Bigfoot may have tired of the rain and be seeking sunnier climes. The latest sighting (and hearing) comes from a construction crew in the Sierras, near Fresno. According to an Associated Press report, five "chilling screams" were heard. The members of the crew saw the silhouette of a "giant, humanoid, shadowy, hulking, lumbering creature" who got

away—as monsters usually do. Too frightened to go to sleep, they fled into the night with flashlights. Skeptical forestry officials suggest they may have seen a bear or a mountain lion.

But the most mystical spot in California is undoubtedly Mount Shasta, the snow-capped volcano at the southernmost point of the Cascade Range. For decades, mystical adepts have known that the beings that inhabit its summit, or perhaps even its volcano crater, are the last survivors of the Lost Continent of Mu. According to the Saint Germain Foundation, headquartered nearby, it was on Mount Shasta in the 1930s that that group's founder encountered an "ascended master" who gave him the Cosmic Truths that the group teaches today.

A recent story in the *San Francisco Examiner* quotes some of the many people who have come to Shasta because of the "psychic energy" there. Elizabeth Stack, who thinks of herself as a "spiritual healer" as well as a "psychic sponge," says "there is definitely a lot of healing energy here. . . . There are a lot of people who believe there are space beings" nearby. Others claim that "pink UFOs" fly overhead, and if a cloud of an unusual shape is seen over the mountain some call it a spaceship. Another woman, calling herself Yellow Bird, claimed she was from the planet Jupiter. The proprietors of a metaphysical bookstore in the nearby town explain that Shasta emanates positive energy, attracts UFOs, and serves as a beacon of enlightenment. Compared with such potent supernatural forces as this, states that can boast only a few monster sightings or some haunted houses clearly aren't in the same league with California. Presumably Bigfoot, on his way south from Oregon, must have passed near Mount Shasta, and the powerful energies he picked up there may well enable him to continue his remarkable feat of evading detection and capture as he moves ever closer to Los Angeles. •

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B. Paid and/or requested circulation		
1. Sales through dealers and carriers, street vendors and counter sales	279	345
2. Mail subscriptions	25,088	26,427
C. Total paid and/or requested circulation	25,367	26,772
D. Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies	2,518	2,233
E. Total distribution (Sum of C and D)	27,885	29,005
F. Copies not distributed		
1. Office use, left over, unaccounted, spoiled after printing	887	995
2. Return from news agents	0	0
G. Total (Sum of E, F 1 and 2)	28,772	30,000

A Case Study of the West Pittston 'Haunted' House

Rapes by a demon, stenches, screams, hoofbeats, ghostly glows, moving objects, exorcisms—this 'demon-haunting' case had everything. Did any of it really happen?

Paul Kurtz

The news that demons had invaded a house in West Pittston, Pennsylvania, first appeared in an Associated Press report on August 18, 1986. The house at 330-332 Chase Street in this small mining town just outside of Scranton is occupied by Jack and Janet Smurl and their four children: Dawn, 17, Heather, 14, and Karen and Shannon, 8-year-old twins. Mr. Smurl, 44, is production manager for the Topps Chewing Gum Company. The other side of the duplex is occupied by Jack's elderly parents. After the story broke, hordes of newspaper, magazine, radio, and television reporters from far and wide descended on West Pittston to give daily accounts of what was happening.

According to the Smurls, the "strange goings-on" in the house began eighteen months earlier. (In a later news account they extended this to five years.) There were rappings on the walls, objects disappeared or moved around, and a "foul stench" often permeated the house. They claimed they were being terrorized by demons.

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In January 1986, and again in August, the Smurls had invited Ed and Lorraine Warren of Monroe, Connecticut, to investigate the house. The Warrens figured prominently in the "Amityville Horror" and other "demon possession" cases. Ed Warren claims to be a "demonologist"—there are only six or seven in the United States—and Lorraine is a medium. The Warrens maintain that demons do exist and that several are present in the Smurl house. Indeed, it was apparently at the behest of the Warrens that the Smurl family first released their story to the press about these ghostly manifestations.

The Associated Press story of August 18 reported the following events: "The Smurls said they have smelled the stench of smoke and rotten meat, heard pig grunts, hoofbeats, and blood-curdling screams and moans. Doors have opened and shut, lights have gone on and off, formless ghostly glows have traveled before them, and the television set has shot across the room. Even the family dog, a 75-pound German shepherd, has been slammed against the wall while [Jack] Smurl said he stood nearby." Mr. Smurl was also quoted as saying, "Sometimes when I say my rosary it drags me from my knees and tries to beat me into submission."

The Warrens were instrumental in having at least two exorcisms performed by a former Roman Catholic priest, a friend of theirs from Connecticut. (This apparently did not have the sanction of the church.) Moreover, two psychics welcomed to the house claimed that the house was being haunted because a murder had once taken place there.

Once the story appeared, the CSICOP office received many calls from the media and the public asking if we knew what was really going on. With some reluctance, we decided to try to find out. I phoned the Smurl house and told Mrs. Smurl that we wanted to send a team to investigate. She said she would get back to me. When I didn't hear from her, I phoned again and repeated my request. Again she said she would get back to me, but again I waited in vain for her call.

Meanwhile, we enlisted the help of two CSICOP scientific consultants in Pennsylvania: Richard Busch, chairman of the Paranormal Investigating Committee of Pittsburgh, and Milton Rothman, a professor emeritus of physics at Trenton State College now living in Philadelphia. Busch contacted the Smurls by phone and after several conversations they agreed to allow him and Rothman to come to the house. But when they arrived they were denied admittance by Ed Warren and the Smurls. Warren began a dispute about their credentials, and the Smurls eventually called the police. The house was thus closed to independent scientific investigators.

On an ABC-affiliate television show in Buffalo, while I debated her via telephone, Mrs. Smurl complained that she had called the CSICOP offices last year and that we had advised her to have members of her family visit a psychiatrist and that perhaps the family had been watching too many late-night horror movies. Although this sounds like good advice, we have no record of having received such a call. We do receive scores of such calls every year, but because our resources are limited, we cannot investigate all of them.

Family tired of tree-climbers, those who doubt their word

ST LOUIS POST DISPATCH Thurs., Aug. 21, 1986

Demons Haunt Pennsylvania Family

It's an ordinary looking house, yet Janet and Jack Smurl, foreground, say demons have attacked them. Jack Smurl's father, John, stands behind them.

Gossip possesses town with 'haunted' house

HOLD NEWS CONFERENCE — Janet and Jack Smurl, West Pittston, hold a news conference yesterday, at which a statement was read declaring a moratorium on further discussion with the media.

Smurls Appeal to Media For Break; 'Please Pray'

Statue of Christ is present in Smurl home

House haunted, Pennsylvania family says

We invariably ask that the caller send us a letter giving all the facts. (This gives the person the opportunity to take a long, hard look at the situation.) We have no letter on file from the Smurls. In any case, Mrs. Smurl was now adamant in refusing to allow anyone from CSICOP to enter the house. (This was reminiscent of the barring of a similar CSICOP team led by James Randi from the house of the "Columbus Poltergeist" in 1984. See *SI,* Spring 1985.) Mrs. Smurl said the family wanted only peace and quiet.

The Smurls had given sensational reports to the press almost every day, but now that a team of skeptics had arrived they abruptly closed the door to further inquiry and even refused to admit any "unsympathetic" members of the press, many of whom were now highly skeptical of the Smurls' claims.

I nevertheless continued my investigation by phone and spoke to several reporters who had been on the scene, including Jim Collins of the *Scranton Times,* Tom Opdyke, a staff writer from the *Allentown Morning Call* who was doing stories for the *New York Daily News* and *USA Today,* Charles Feldman and Nancy Lane of Cable News Network, and Joseph Marusak of the *Wilkes-Barre Times Leader.*

I also spoke to Jack Smurl's mother, Mary, who lives in the adjoining duplex. Although she had been told to refer all calls to her daughter-in-law, she spoke to me for about 25 minutes. She said that at first there were strange rappings on the wall of her bedroom, which was adjacent to the bedroom of Jack and Janet Smurl and near to that of the two older Smurl children. Historically, teenagers have been involved in poltergeist cases, and I immediately wondered whether Dawn, 17, or Heather, 14, could be responsible for the rappings. Mary Smurl said that one weekend the "presence" even followed the family to New Jersey. She said that the ghost began making noise in the television set, which was turned off and positioned against the wall in her bedroom. She said it was difficult to tell for certain whether the rappings came from the television or from the wall, but that they, in fact, *may* have come from the wall. The bedrooms of the Smurls and Dawn and the other grandchildren were nearby. Was it a demon or a more earthly person rapping on the wall?

Several reporters talked to Dawn, who gave many different accounts of her experiences. Although she didn't mention it when she talked to CBS News, she told Charles Feldman of CNN and Jan Gehorsam of the Associated Press in Philadelphia that she was "attacked and bruised" by the demon while taking a shower. She told Jim Collins of the *Scranton Times* that the ghost moved her lipstick from one side of the dressing table to the other, and her grandmother told me that Dawn reported to her that the demon had taken her earrings and her jeans. These statements fit the pattern of a teenager playing tricks to attract attention. Nevertheless, all the members of the family claimed to believe the house is haunted. Even one of the eight-year-old twins claimed that she had been hurled out of bed by a demon, and the *National Enquirer* ran a photo in which Shannon reenacted the "ordeal" wherein a "vicious demon hurled [her] down a flight of stairs."

Amityville Revisited

Of course special cause for suspicion in this affair was the presence of Ed and Lorraine Warren. They have been involved in many demon-possession cases, including the "Amityville Horror," which has been admitted by its perpetrators to have been a hoax, although the Warrens still maintain that it was "genuine." The facts of the Amityville case are as follows.

In 1974, Ronald De Feo murdered his father, mother, and four siblings in the Amityville house and claimed that evil spirits made him do it. This story received considerable press coverage. Sometime later, after De Feo was indicted for murder, the De Feo house was purchased by George and Kathy Lutz. They fled from the house "in terror" after living there only 28 days amid reported rappings, foul stenches, fly infestation, and the presence of demonic forces. The Lutzes' story was eventually told in Jay Anson's best-seller, *The Amityville Horror,* published by Prentice-Hall and later in paperback by Bantam Books. Shortly after the Lutzes vacated the house, the Warrens conducted a séance, which was covered by New York's Channel 5 TV. Interestingly, although Mark Scott, the anchorman who filmed the sequence, firmly denied that anything paranormal had occurred, the Warrens insist to this day that the house was possessed by demons.

In 1977, the Amityville house was sold to Jim and Barbara Cromarty, who claimed that nothing unusual ever happened. Because they were continually inundated by curious onlookers intruding on their privacy, they sued Jay Anson, the Lutzes, and the publishers of the book for damages. They were awarded a sum reportedly in the six figures. William Weber, the defense lawyer in the De Feo murder case, also sued the Lutzes, claiming that together they had "created this horror story over many bottles of wine . . ." and that the Lutzes had reneged on their agreement to collaborate with him on the book. "We were really creating something the public would want to hear about. If the public is gullible enough to believe the story, so be it," he said.

According to the official trial transcript, Judge Jack Weinstein, who presided in the Weber lawsuit, said, "The evidence shows fairly clearly that the Lutzes during this entire period were considering and acting with the thought of having a book published." The priest, Father Ralph Pecararo ("Father Mancuso," in the book), also sued the Lutzes and Prentice-Hall for invasion of privacy and distortion of his involvement in the case. He received an out-of-court settlement. The police department denied that the Lutzes had ever called for help, as they claim. Far from being a "true story," the Amityville Horror turned out to be fiction, pure and simple.

The Warrens acted as "demonology advisors" for *Amityville II,* a "prequel" to the "Amityville Horror" movie, which made millions at the box-office. The Warrens promoted the story and never denied or discredited any part of it.

The Warrens' role in the West Pittston affair suggests a possible replay of the Amityville scenario. They alone had privileged access to the Smurl house. According to the Associated Press, Warren maintained that when he entered the master bedroom he "invoked the name of Jesus and commanded the spirit to reveal its identity. 'Within seconds the room turned icy cold,' Warren said. . . . 'There was a foul stench, I would describe it as rotting flesh. Objects on the bureau started to move and then in front of the bureau gossamer threads, a mucouslike, smoky-type substance, whirled and materialized on the mirror, spelling out filthy obscenities, telling me in no uncertain terms to get out of the house.' "

How credible is the Warrens' testimony? They claim that they have captured these paranormal events on audio- and video-tapes, but they have thus far refused to release them for examination. When asked by a CNN reporter where the tapes were, Warren said he had loaned them to a TV company but didn't remember its name. When I appeared with Ed and Lorraine Warren on "A.M. Philadelphia" (ABC-TV), I repeatedly asked Warren for copies of these tapes. His only response was that they would be released in time, but only to the Roman Catholic church. However, the Scranton Diocese has been reluctant to talk about the case. Although it had invited Father Alphonsus Trabold of St. Bonaventure University to investigate, he had not visited the house; nor had the church seen or heard the Warrens' tapes. Father Trabold was cautious in discussing the case with the press, but speculated that such events might be due to "psychokinesis" or a psychiatric condition. The psychokinetic explanation is often appealed to by parapsychologists. It is highly controversial, for skeptical scientists have been unable to corroborate the existence of psychokinetic phenomena in general or to determine its presence in so-called poltergeist cases. The psychiatric explanation, however, seems more relevant to the Smurl case.

Demons or Delusions?

An interesting feature of this story is the role of Jack Smurl, and especially his statement, quoted in the *New York Daily News* (August 24), that "at least

a dozen times it, or whatever you want to call this grotesque woman, has had intercourse with me in bed. I was awake, but I was immobile." I was able to question Smurl when he and his wife participated in the "A.M. Philadelphia" program by telephone. He claimed that the report was accurate, that the demon (Succubus) had many times stood at the foot of the bed before raping him. He said that the events in the house were so bad that "one could almost feel like committing suicide."

The question that immediately came to mind was whether Mr. Smurl was suffering from delusions. Did he really believe what he said, or was he making it up? I had been told by a CNN reporter that Smurl had undergone brain surgery three years ago to relieve "water on the brain." When I questioned him, Smurl confirmed this, though he maintained that his physician, Dr. William A. Black, Jr., of Scranton, said that this was not the cause of his present "paranormal" experiences—which he again insisted were genuine.

I then enlisted the aid of Stephen Barrett, a psychiatrist, and Robert Gordon, a psychologist, both from Allentown, who offered to provide psychiatric examination and diagnoses of Mr. Smurl and other members of the family. The results would of course be confidential. But the Smurls declined the offer, saying that neither Jack Smurl nor any other member of the family was in need of psychiatric treatment.

Dr. Gordon suggested in a prepared statement quoted in the *Times Leader* and elsewhere that the family may be suffering from "hysteria" similar to that prevalent during the Salem witch trials. A shared tension, he said, might cause mass hysteria, with shared symptoms, which could involve delusions or hallucinations. The family's strong religious beliefs in demonology, he speculated, might serve to bolster the delusional system of belief. Something terribly wrong may be going on in the family system, he said, that has nothing to do with demons. Interestingly, the Smurls are extremely religious. Jack Smurl has been quoted as saying that he attends mass daily, prays often, and says the rosary every night.

This case is one of the most bizarre on record. It does not involve the possession of a person by a diabolical force or being, which itself is very difficult to verify, but rather the appearance of inhuman forces (a "preternatural being," as the Warrens call it) and demons who allegedly assault their victims not only psychologically but physically. The *Scranton Times* of September 14 reported that the Warrens concluded that three spirits are present: " 'Patrick', a dead man who is afraid to face God for fear he will be punished for some unexplained act he has committed; 'Abigail,' a dead old woman who is somewhat senile and confused [Is she the one that raped Jack?], and an unnamed devil with a putrid odor." To that list the Smurls add another, "a 'good spirit' who protects them and sometimes makes a room smell like roses."

For any of these demonological claims to be accepted, they must be corroborated by independent observers. Thus far, we have only the testimonies of the Smurls and/or the Warrens, unsubstantiated by any kind of

objective physical evidence. The presence of such beings is highly improbable. On the other hand, we are committed to the impartial examination of any such claims, however exaggerated or fanciful they might appear, particularly given the great public interest in the case. But we were denied the opportunity to examine the site or to freely question the claimants. We could only examine the available evidence and consider possible alternative explanations.

Early in the investigation, when I was interviewed by Cable News Network and the Associated Press, I said that *prima facie* the case had "all of the characteristics of a hoax," that it included exaggeration if not outright fabrication, and that unfortunately it contained considerable "uncorroborated mishmash." Mrs. Smurl bitterly countered my remarks by saying that I had already made up my mind since I did not accept "supernatural explanations." We had apparently reached an impasse. For when I expressed my desire to proceed with the inquiry the Smurls sought to block our investigation. They had concluded that the only explanation was demonological. The Smurls told newspaper reporter Joseph X. Flannery that when someone visits the house to check on the presence of spirits, "nothing happens." They said that experts on the occult explained to them that demons and spirits of the deceased will avoid manifesting themselves when such investigators are present. How typical this is of the responses of believers to skeptical investigation!

Mine Shaft or "Gold Mine"?

In spite of the obstacles, we decided to make still another attempt to get to the bottom of what was happening at 330-332 Chase Street. We offered to put the Smurls up in a hotel, all expenses paid, with a security guard to protect them, if they would vacate the house and allow us to spend some time in it. Again a firm refusal. Not willing to give up, I decided to send two members of the CSICOP staff to West Pittston to dig further into the facts.

On September 4, Barry Karr and Mary Beth Gehrman drove to West Pittston. Since we had heard that the area under the Smurls' house was honeycombed with abandoned mine beds, we wanted to find out if this might explain some of the noises and the alleged movement of objects in the house. Our investigators visited the Wilkes-Barre Office of Surface Mining, where they pored over old mine maps. A spokesperson for the office denied that the abandoned and filled-in mine-shaft across the street or the seven layers of veins underneath the street could be responsible for the reported strange events. According to reporter Tom Opdyke, who had been in the house and in the basement, the Smurl house is badly settling. Moreover, a porch down the street and a garage on the next street had to be rebuilt after "caving in." Such events apparently occur sporadically throughout the area.

Karr and Gehrman then questioned the Smurls' neighbors. Some thought the mine veins could be responsible for the noises in the house—though those nearby claim that they do not hear similar sounds in their houses. One

skeptical neighbor pointed to a squirrel in the tree in front of the Smurls' house and said, "There's your demon!" Several others supported his theory, maintaining that many squirrels, raccoons, and skunks inhabit the area. On the whole, the neighbors treated the Smurl affair as a joke. Although one of the next-door neighbors, Debbie Watson, reported hearing screams in the Smurl house when no one was home and scratching noises at the screen of an upstairs window, others, including the woman in the duplex adjacent to the Watsons', were convinced that nothing strange was occurring.

Karr and Gehrman tried to visit the Smurl house, but were denied admission. They next questioned Steve Ellis, who had lived in the house for seventeen years before the Smurls bought it fourteen years ago. He reported that nothing strange had ever occurred there and doubted the Smurls' claims.

Our investigators also followed up the claim of an area resident, Bernard Radzvin, that the foul smell the Smurls reported was due to an inadequate sewer pipe. Although Street Commissioner Joseph Raiesky denied this was so, the neighbors insisted they had complained for about two years at town meetings about the foul odor emanating from the sewer. They also reported that a recent fire at a nearby lumber yard might account for some of the smells.

Some neighbors were quick to point out that, if the house is infested by demons, the Smurl children do not seem frightened but take it as great sport and are sometimes left alone in the house by their parents. Moreover, there is no police record that the Smurls have ever filed a complaint or called the department for help, although Mrs. Smurl maintains that they did.

Many residents of West Pittston were very skeptical of the Smurls' motives. Some believed that they had planned the affair from the beginning and that a film or book contract would probably turn up. How right they were about a movie deal! For on that very day (September 6) the *Wilkes-Barre Times Leader* reported that Jack Smurl had been negotiating with the Star Group, a Hollywood production company with which Ralph Lomma, a prominent Scranton businessman, was involved. Indeed, according to news accounts in several papers, Smurl has also met with Jason Miller, who played the part of the priest in *The Exorcist.* Miller, now living in Scranton, visited the Smurl house with his publicist, William McAndrew, shortly after the story broke. The reports were that Miller would direct the film. It would have a new twist, reported the Wilkes-Barre paper—for it would feature the many rapes of Jack Smurl by a demon!

Although the Smurls had refused to meet with them, Karr and Gehrman surprised them as they were returning from a trip to a grocery store. They were able to engage them in a brief conversation. Jack and Janet Smurl insisted that they were "telling the truth," that "the house is infested by demons," and that they are "very religious" people. Karr asked Jack Smurl if he had discussed a film contract with the Star Group as the press reported.

"No," Smurl said. "It is totally untrue. We have had over a dozen offers, but we are not interested in the money."

Karr persisted: "But did you meet with Lomma, Miller, and McAndrew?"
"No," replied Jack, "*I did not.*"

Yet Bill McAndrew, in a story in the *Philadelphia Inquirer,* said that he had attended a meeting with Smurl, Miller, and Lomma: "I don't believe in ghosts," he said, "but we were impressed with the decency and honesty of the Smurls." He later reported that the Hollywood film director William Friedkin was also interested in the Smurls' story. Ralph Lomma, president of the Star Group, confirmed that the company had been negotiating with Jack Smurl for exclusive rights to the family's tale of demonic possession. "We have had several discussions," he said. "We haven't signed anything yet, but we hope to. It's going to make a helluva movie when it's finally made."

As this magazine goes to press, two further facts have been reported that throw more light on the case. First, the Smurls issued a statement to the press four days before Halloween claiming that the demons had left their house. According to a UPI story, Janet Smurl said: "It's like a different home now. We are not afraid to go to sleep at night." The elimination of their problem "can only be credited to the intercession of the Most Blessed Virgin Mary, St. Michael, and the Sacred Heart of Jesus, who have answered our prayers," she said.

Second, St. Martin's Press announced on November 14, according to the Associated Press, that they have signed a book contract with the Smurls. A hardcover edition will be published first, followed sometime later by a paperback. The book is scheduled to be written by a local newspaper reporter working closely with the Smurls. The size of the advance was not revealed!

Conclusion

Were the Smurls totally sincere in what they claim to have witnessed? Can normal physical and/or psychological explanations be given for the alleged phenomena? Were one or more members of the household engaged in a prank? Is Jack Smurl suffering from delusions, or is his story pure fabrication? The fact that the Smurls have signed a book contract raises serious questions about their motives. Whether or not a movie will ever be made about the Smurl house in West Pittston remains to be seen. This no doubt depends on the success of the book.

Our investigation of the Smurl case thus far points to several possible alternative explanations for what has allegedly been happening—without the need to invoke an occult or paranormal one. No doubt, however, a large segment of the public and of the media is far more fascinated by demons and ghosts than the possibility of a prank or a hoax. •

Science, Creationism, and the U.S. Supreme Court

The story behind the unprecedented brief signed by 72 Nobel laureates, plus a look at the legal issues surrounding the case and the challenge the Louisiana law poses to science and science education.

Al Seckel

SCIENTIFIC EDUCATION in the public schools of the United States is once more under attack. The Supreme Court is about to consider the constitutionality of a Louisiana statute that would require public schools to vitiate their presentation of modern science by presenting a thinly veiled religious construct as a comparably scientific approach to explaining nature. In discussions of the history of the universe or of the earth or of life or human beings, any consideration of "evolution science" (as the statute calls it) would have to be offset by a presentation of "creation science." The latter is a concoction, based on religion, that offers "scientific" justifications for belief in the literal truth of the creation stories of the Bible.

The case is of great importance for science education not only in Louisiana but throughout the country, and it therefore has great import for science itself. The statute represents a bald attempt to bring the content of science under ideological control and to warp the presentation of information developed in a score of scientific disciplines, from cosmology and astrophysics to paleontology, biochemistry, and even linguistics.

The Southern California Skeptics (SCS), the largest local group associated

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with the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), has led a highly effective effort to inform scientific organizations and individual scientists about the nature and urgency of the case and to enlist their participation in an *amicus curiae* brief that asks the Court to declare the Louisiana statute invalid. The brief includes among its signatories 24 scientific organizations (including CSICOP) and 72 winners of the Nobel Prize in the fields of Physics, Chemistry, Medicine or Physiology. It attacks the statute's mischaracterization of creationism as science and represents the largest group of Nobel laureates ever to support a single statement on any subject. Furthermore, this is the first time that so large and respected a group of scientists has joined together to publicly challenge the constitutionality of a statute, making this brief a document of historical importance.

First, some background. The creationist movement is closely aligned with what has been called "evangelical fundamentalism." For example, the Creation Research Society, a leading association of creationists, requires its members to subscribe to an explicitly fundamental "statement of belief." The Louisiana

Evolution: Beyond Reasonable Doubt

Francisco J. Ayala

The theory of evolution (1) asserts that evolution has occurred and (2) explains how it occurred.

Biological evolution is a fact established beyond reasonable doubt. Living beings descend from other organisms more and more different as we go farther back into the past. Our ancestors of many millions of years ago were not human. We are related to the apes and other animals by common ancestry. Biological evolution is a fact established with the same degree of certainty as the rotation of the planets around the sun or the roundness of the earth.

The theory of evolution explains, on the basis of scientific evidence, how evolution happened. For example, scientists explain the functional organization of organisms as the result of natural selection. In a similar way, scientists use gravity for explaining the motions of the planets. Many details of the explanation (for example, whether the rate of change is more or less jerky) are debated by scientists, and some views change with time. Similarly, scientists have changed from Newtonian mechanics to relativity theory as a better explanation for the planets' movements.

No biological concept has been more extensively tested and more thoroughly corroborated than the evolutionary origin of living organisms through millions of years of descent with modification. Moreover, nothing in modern biology makes sense except in the light of evolution.

Many religious people accept the fact of evolution. It is possible to admit that God is the Creator of the world without denying biological evolution—as it is possible to accept that a human being is a creature of God without denying that he has developed from a fertilized egg and embryo by natural processes.

To claim that the statements of Genesis are scientific truths is to deny all the evidence. To teach such statements in the schools as if they were science would do untold harm to the education of American students, who need scientific literacy to prosper in a nation that depends on scientific progress for national security and for individual health and economic gain.

The Council of the National Academy of Sciences has declared that "religion and science are separate and mutually exclusive realms of human thought whose presentation in the same context leads to misunderstanding of both scientific theory and religious belief."

Scientific reasoning and religious belief are distinct modes of thought. Let science and religion follow their separate courses. That is the American way. And only thus will rationality and common sense survive in our nation.

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statute marks the culmination of decades of fundamentalist efforts to change the way science is presented in the public schools.

Certainly the most famous battle in the ongoing struggle took place in the 1920s, when Tennessee prosecuted John Scopes for teaching evolution in the public schools. Despite the renowned efforts of defense attorney Clarence Darrow, Scopes was convicted. His conviction was later overturned on a technicality, but the Tennessee law prohibiting the teaching of evolution remained on the books for another forty years. During that period, creationists maintained a strong influence over the content of public school textbooks. Rather than inviting confrontation with creationist activists, many textbook publishers chose to ignore or minimize the importance of evolutionary theory and its power as a scientific theory.

In the 1960s, the Supreme Court was finally called upon to evaluate several practices of critical significance to the creationists. In 1962 and 1963, an almost unanimous Court held that the Establishment Clause prohibits state-sponsored school prayer. And, in 1968, the Court struck down an Arkansas statute that prohibited the teaching of evolution—a statute very similar to the one in Tennessee under which Scopes had been convicted.

During the 1960s, in response to the clarification of constitutional law, the creationists—under the leadership of Henry Morris and Duane Gish—accelerated the dissemination of what is variously known as "scientific creationism" or "creation science." The objective was to describe the Genesis account of creation in a way that might appear sufficiently "scientific" to be usable in the public school classroom. Primarily through the efforts of the San Diego-based Institute for Creation Research, a vast literature of "creation science" emerged.

A number of states then considered whether the new form of creationism ought to be incorporated in public school education. Legislators in at least 17 states have introduced bills calling for the teaching of creationism. In 1977, the Indiana Textbook Commission adopted a creationist biology textbook. However, when the religious content of the book was brought to light, a local court held that its use would violate the Establishment Clause.

Creationist efforts to obtain legislation requiring "balanced treatment" of creationism and evolution in public schools later came to fruition in the passage of an Arkansas statute. After a lengthy and expensive trial featuring numerous expert witnesses, that statute, too, was held unconstitutional.

In 1981, the Louisiana legislature passed a law requiring "balanced treatment" of evolution and "creation science" in the public schools. The law provides that both evolution and creation be taught as "theory" rather than as "proven scientific fact." A group of parents, teachers, and organizations immediately challenged the law as a violation of the Establishment Clause. "In other cases, the so-called Establishment Clause has been construed to forbid the teaching of religion in the public schools.

The Louisiana case came before a federal district judge in that state who ruled that creationism is a religious belief and that teaching "creation science"

Photo by Philip J. Klass

Anfinsen, Ayala, and Gould with brief signed by Nobel laureates.

in the public schools would therefore violate the Constitution. (Technically the judge ruled on a motion for summary judgment, deciding that he did not need to hold a trial since there were no disputed issues of fact and the only questions for decision were purely legal ones.) Louisiana appealed to the United States Court of Appeals for the Fifth Circuit, which affirmed the district court's decision. Louisiana asked the entire Fifth Circuit to rehear the case, but the request for rehearing was denied by a vote of 8 to 7. Louisiana then exercised its right to have the United States Supreme Court review the Fifth Circuit decision, and on May 5, 1986, the Court announced that it had taken jurisdiction over the appeal.

The Supreme Court ordinarily has a fair amount of discretion in deciding which cases it will hear, but has much less discretion when a federal court strikes down a state law. In those cases, the Court can decline to review the decision only if there is "no substantial question" about its correctness. In this case, at least four of the nine Justices concluded that Louisiana had raised a "substantial" question, but the Court does not disclose which four Justices or their arguments. It is reasonable to speculate, however, that the Justices who voted to hear the case were concerned about why the District Court had ruled "creation-science" to be religious without holding a full-blown trial.

When the newspapers published the Supreme Court's decision to hear this case, I contacted my friend Jeff Lehman, who had recently clerked for a Supreme Court Justice and now works for the Washington law firm of Caplin & Drysdale, to find out more about the decision and what SCS could do to help. After learning that an *amicus* brief is the proper way for independent outsiders to present their views to the Supreme Court, I went to the SCS Board of Directors, and they agreed to help put together and fund a brief on behalf of the scientific community on the issue of the teaching of evolution and "creation science." Meanwhile, Jeff approached fellow Caplin

'Creation Science' Is an Oxymoron

Stephen Jay Gould

Science, above all, is a methodology for acquiring testable knowledge about the natural world—"the art of the soluble," in Sir Peter Medawar's apt phrase. It is not, and cannot be, a compendium of certain knowledge. If the vernacular word *fact* has any currency in science, it can only be defined as "confirmed to so high a degree that it would be perverse to withhold provisional assent." By this definition, evolution—the observation that all organisms are connected by unbroken ties of genealogy—is as much a fact as anything discovered by science—as well confirmed as Copernicus's claim that the earth moves around the sun. Evolutionary biologists argue intensely about mechanisms of evolutionary change—and such meaty debates are the soul of exciting science, the chief sign of its good health—but we all accept the fundamental fact of genealogical connection.

As a methodology of research, science adopts as its cardinal postulate—proved fruitful by its enormous success since the time of Galileo, Newton, and Descartes—the commitment to explain empirical phenomena by reference to invariant laws of nature and to avoid appeals to the miraculous, defined as suspension of those laws, for particular events. The notion of "abrupt appearance"—the origin of complex somethings from previous nothings—resides in this domain of miracle and is not part of science. Punctuated equilibrium, catastrophic theories of mass extinction, hopeful monsters, and a variety of hypotheses about rapid rates of change in continuous sequences—not about unintelligible abrupt appearances—are part of scientific debate and bear no

& Drysdale lawyer Beth Kaufman (knowing of her expertise on the Establishment Clause) and together they got Caplin & Drysdale's agreement to provide its legal services gratis. SCS board member and Nobel laureate physicist Murray Gell-Mann (a CSICOP Fellow) agreed to send letters to the U.S. Nobel laureates in science and medicine, and to other scientific organizations, asking for their participation and support of the brief. The SCS *amicus* brief thus began to evolve.

To help familiarize the lawyers with the past works of "creation science" groups, I put them in touch with SCS member William Bennetta, who has spent several years investigating and writing about "creation science." Bennetta, armed with boxes of material, flew to Washington. In short order, he was able to give Kaufman and Lehman the flavor of the entire controversy.

An *amicus* brief may articulate any particular view its supporters wish to express; it need not and should not make all of the possible arguments in the

relationship to the nonscientific notion of abrupt appearance, despite pernicious and willful attempts by many creationists to distort such claims by misquote and half-quote to their alien purposes. Punctuated equilibrium, in particular, is a claim that evolutionary trends have a geometry that resembles a climb up a staircase, rather than a slide up an inclined plane. It is, in other words, an alternative theory about the nature of intermediate stages in evolutionary trends, not, as creationists have claimed, a denial of these stages.

As a term, *creation science* is an oxymoron—a self-contradictory and meaningless phrase—a whitewash for a specific, particular, and minority religious view in America, biblical literalism.

As a religious idea, it differs sharply from the tenets of most other faiths—from the enormously lengthy cycles of repetition in Hindu thought, from the usual interpretation of origins in my own Jewish faith, and from the allegorical readings of the Bible accepted by Catholics since the time of St. Augustine. Biblical literalism, like all notions in the diverse array of faiths professed by Americans, belongs in homes and churches—not in legislatively mandated curricula of science courses in public schools.

It is particularly tragic that public understanding of science should be so threatened just when science has become so central and crucial in all our lives. This battle is for science itself, not only for the right of teachers to teach a fact of nature unimpeded by state commands. How can Americans hope to understand the nature of science if a partisan and minority religious doctrine, completely outside the norms and procedures of science, be taught as science, against the conscience and convictions of trained teachers, in the nation's schools. •

Stephen Jay Gould is with the Museum of Comparative Zoology at Harvard University, where he teaches biology, geology, and the history of science.

case. Since the ACLU would be discussing the Establishment Clause decisions and their bearing on this case, it was decided to focus on the issues that scientists would consider important in order to make a meaningful contribution with the *amicus* brief.

Ultimately, the brief focused on two issues. First, drawing on the wealth of "creation science" writings now available, the brief sought to prove to the Court that "creation science" embodies certain religious ideas that come from Genesis: that a divine Creator created the universe and life from nothing; that all the "kinds" of plants and animals were created at once and no "kinds" have ever evolved into other "kinds"; that a worldwide flood caused the formation of fossils and all other geological and paleontological phenomena; and that the universe and life are less than 10,000 years old.

In the Louisiana law that the Supreme Court will assess, "creation science" has been fully sterilized. The law prescribes "balanced treatment" for "evolu-

Photo by Phillip J. Klass

Anfinsen, Gould, and Ayala (*all seated*) at Washington news conference. Kaufman and Seckel are at the rear.

tion science" and "creation science," but it does not describe "creation science" at all. It says only that "creation science" comprises the "scientific evidences for creation"; it says nothing to suggest what "creation" may mean. The state of Louisiana denies that the "creation science" of the statute is linked to religion, denies that it corresponds to orthodox "creation science," and denies that it is anything more than a preoccupation with "origin through abrupt appearance in complex form." That phrase, or some variation of it, appears in affidavits that were devised for the state *after* the statute had been passed and had been challenged in a lower federal court. The state asserted that "creation science" did not involve these concepts; the SCS brief shows that the "creation science" of the statute can be nothing but the "creation science" of fundamentalists, the state's representations notwithstanding. Furthermore, the brief argued that the "abrupt appearance" construct is not a sufficiently well defined alternative to orthodox "creation science." It fails to define a concrete alternative to evolution; accordingly, it is implausible that the Louisiana legislature intended the Act to embody it rather than orthodox "creation science." Therefore, the sterilized "abrupt appearance" construct can only be understood as a post hoc explanation created for the purpose of defending this unconstitutional Act.

The second argument proceeds by offering the Court a careful distinction between scientific fact and theory. Facts are properties of natural phenomena; theories are naturalistic explanations for a body of facts. The brief explains that this distinction permeates *all* of science, not merely those areas governed by the theory of evolution. By requiring that evolution be taught as "theory," while permitting *other* scientific theories to be taught as "proven scientific fact," the statute deprecates evolution. By singling out one topic of science (so-called "origins") for special treatment, the legislature conveyed the false message that the prevailing theory of "origins"—evolutionary theory—is less

Photo by Philip J. Klass

Lehman, Kaufman, and Seckel on steps of the Supreme Court.

robust than all other theories in science. If the Court can understand this distinction between fact and theory, it will understand that the act could not have been intended to promote academic freedom, but rather was intended to disparage evolution because of its conflict with certain religious beliefs.

Because of the historic importance of this brief and of the case itself, it was decided to hold a news conference in Washington at the National Press Club on the date of filing. Representing the brief and the issue of "creation science"/evolution were 1972 Nobel laureate biochemist Christian Anfinsen; Harvard paleontologist and CSICOP Fellow Stephen Jay Gould; geneticist Francisco Ayala, chairman of the National Academy of Sciences Section of Population Biology, Evolution, and Ecology; and SCS Executive Director Al Seckel. Beth Kaufman and Jeff Lehman were also present. Gell-Mann, Gould, and Ayala read prepared statements. (See texts.) Approximately 70 members of the press attended: reporters from all the major wire services, television and cable news networks, major newspapers, and news magazines, as well as representatives from the major scientific, legal, and educational publications. The story was widely reported all over the United States and was front-page news throughout the state of Louisiana.

The purpose in holding a news conference was not simply to advertise the brief but also to focus public attention on how important proper scientific education is to the welfare of this country. In their statement of interest in the brief, the scientists explain that, while it is important that science education accurately portray the current state of substantive scientific knowledge, it is even more important that science education accurately portray the premises and processes of science. They contend that teaching religious ideas mislabeled as "science" is detrimental to scientific education: "It sets up a false conflict between science and religion, misleads our youth about the nature of scientific inquiry, and thereby compromises our ability to respond to the problems of

Statute Attacks All the Sciences

Murray Gell-Mann

It is most important that the U.S. Supreme Court affirm the decision of the U.S. Court of Appeals for the Fifth Circuit, which threw out a Louisiana statute mandating the teaching of "creation science." That statute would require that in the public schools of Louisiana the teaching of certain parts of science (which concern "origins" and thus appear to conflict with the claims of particular religious sects) would be selected for special pejorative treatment and would have to be "balanced" by the teaching of something called "creation science." It is shown in our brief that this expression can mean only one thing, namely, a pseudoscience based on the literal interpretation of certain Bible stories and preaching that the universe and the earth are both young (thousands instead of billions of years old), that animals and plants were created in immutable "kinds," that fossils are to be explained by a universal Noachian Flood, and so forth.

I should like to emphasize that the portion of science that is attacked by the statute is far more extensive than many people realize, embracing very important parts of physics, chemistry, astronomy, and geology as well as many of the central ideas of biology and anthropology. In particular, the notion of reducing the age of the earth by a factor of nearly a million, and that of the visible expanding universe by an even larger factor, conflicts in the most basic way with numerous robust conclusions of physical science. For example,

an increasingly technological world. Our capacity to cope with problems of food production, health care, and even national defense will be jeopardized if we deliberately strip our citizens of the power to distinguish between the phenomena of nature and supernatural articles of faith."

The range of scientific expertise found among these Nobel laureates indicates that they perceive more than just the theory of evolution to be at stake. As even the creationist writings reveal, evolutionary biology is intertwined with other sciences, ranging from nuclear physics and astronomy to molecular biology and geology. Therefore, although the creationist campaign is advertised as merely an assault on evolution, it is in fact an attack on the full sweep of scientific knowledge. Moreover, by challenging the methodology of evolutionary biology, the creationists also challenge the methodology of all of modern science.

It is because of the creationists' broad attack on science that the brief was able to attract such wide support in the scientific community. Earlier attempts to rally these scientists against the Reagan Administration's Strategic

fundamental and well-established principles of nuclear physics are challenged, for no sound reason, when "creation scientists" attack the validity of the radioactive clocks that provide the most reliable methods used to date the earth.

If the kind of requirement envisaged by the statute is imposed on our public schools, the graduates may be ill-equipped to deal with problems of health, agriculture, industrial production, environmental quality, and national defense, and our republic is in grave danger.

It has often happened that science has had to defend itself against the dark forces of ignorance and superstition. The action by the Louisiana legislature recalls in some ways the situation in the Soviet Union under Stalin and his immediate successors, when the authorities interfered with the teaching of biology and promoted the pseudoscientific doctrine of Lysenko, with adverse effects on agriculture as well as on teaching and research.

All scientific conclusions are subject to revision if new discoveries or new convincing arguments arise. When there are serious competing hypotheses, they are discussed and compared in scientific papers in refereed journals, in serious textbooks, in seminars, and in science classes. By contrast, "creation scientists" who are members of the Creation Research Society have to subscribe to a statement of belief in the literal truth of Bible stories.

The Louisiana statute represents an attempt by a legislature to force entry into science classrooms on behalf of a particular kind of fundamentalist religion dressed up as science.

Murray Gell-Mann is Robert A. Millikan Professor of Physics, California Institute of Technology, and winner of the Nobel Prize in Physics in 1969.

Defense Initiative, often called the Star Wars program, failed miserably. Arno Penzias, who shared a Nobel Prize in 1978 for his work in discovering cosmic radiation, supporting the "big bang" theory of the universe, called the unified action on creationism unusual and said that he could not imagine any other issue receiving support from such a broad range of Nobel laureates. Among the other Nobel signers of the friend-of-the-court brief were people with whom he often had violent arguments on other issues, Penzias said.

According to Val Fitch, who won the prize in Physics in 1980 for helping to explain the predominance of matter over antimatter in the universe, the action was a defense of the integrity of science. "When scientific method and education are attacked, the laureates close ranks and speak with one voice," he said. The Louisiana law earned this unprecedented opposition because "it defies all scientific reason," Fitch said.

The brief was filed on August 18, 1986. Oral arguments will be heard around January, but a decision may not be issued until June or July 1987. As usual with cases involving religion, this case will have impact far beyond the

state lines of Louisiana. If the Supreme Court affirms the lower courts' decisions in this case, other states will know that similar statutes would be considered unconstitutional. If it were to reverse, the creationists would enjoy a devastating propaganda victory (even though the case itself would continue in the lower courts).

Both sides in the controversy admit that the SCS brief will receive more attention than the many other friend-of-the-court briefs that flood court clerks' offices. "It's got to make the Supreme Court sit up and take notice," said Martha Kegel, executive director of the ACLU's Louisiana chapter. "I think it shows the impact of the case to the scientific and academic communities," she said. "There's the realization that this law, if allowed to stand, will have a detrimental effect on scientific education and academic freedom."

Kendall Vick, the Louisiana assistant attorney general, said it is difficult to gauge how much effect the brief will have. But in most cases, he said, "unless it is a very significant brief by a group like this or the solicitor general or attorney generals of all the states, [one of these briefs] doesn't have much impact."

If next summer the Supreme Court rewards our efforts with a victory, we should not be lulled into complacency. Often school boards or even individual teachers institute religion in the classroom either in ignorance of or in spite of its unconstitutionality. These actions are far less visible than a state statute; they will continue unless involved parents and community members complain about them. It is the responsibility of each of us to ensure that the Constitution is not thwarted in this way.

Postscript: A tremendous amount of effort was spent in preparing this brief; we thank the many volunteers who made this effort successful in so short a time (two and a half months). We would also like to thank those individuals and groups who made contributions to help defray the expenses, including CSICOP, which generously donated $2,750. •

Correction

In J. W. Grove's review of *Science Confronts the Paranormal,* which appeared in our Fall 1986 issue, some words were inadvertently omitted. Beginning on line 6 of page 96 the text should read:

> But they tend to arise from sociopolitical causes rather than from the nature of science itself. We have had several cases in recent times . . .

The Great East Coast UFO of August 1986

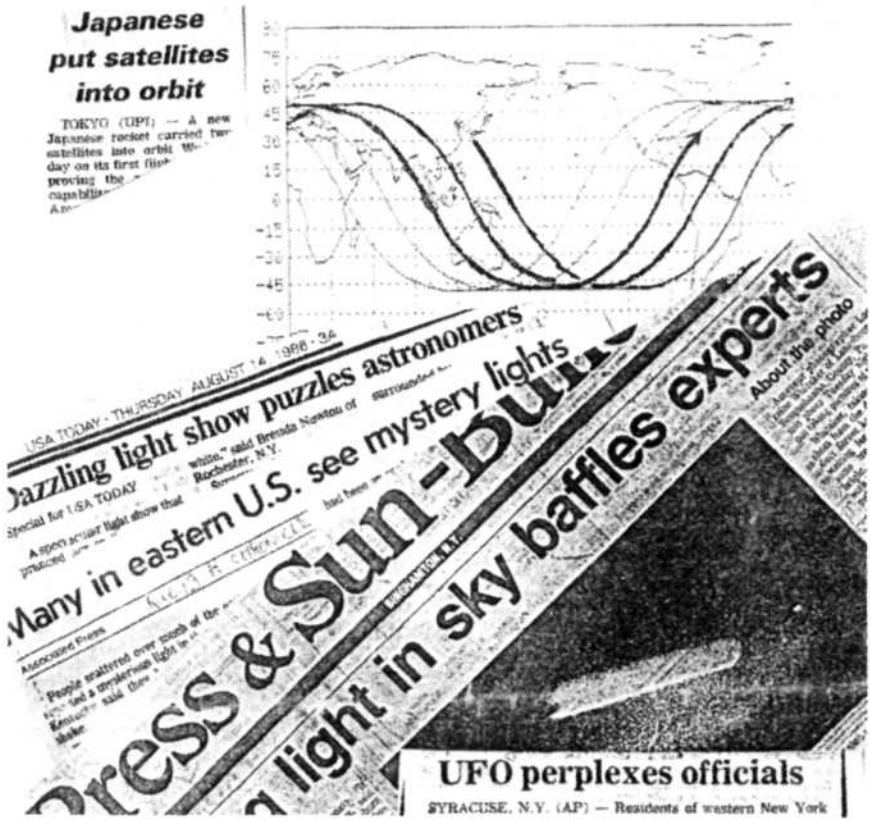
An illuminating UFO case raises several interesting points.

James E. Oberg

AT ABOUT 10 P.M., EST, on Tuesday, August 12, 1986 (0200 UT, August 13), nearly the entire eastern half of the United States was treated to a spectacular celestial apparition. Millions of people were outside looking for Perseid meteors, and many of them had their astronomical instruments and cameras at the ready. So when a bright cloudlike UFO (for it was a genuine unidentified flying object, at least for a day) appeared in the eastern sky, moving from right to left, it had probably the largest audience of any UFO ever witnessed in North America. Sightings occurred from Georgia (Florida was socked in with clouds) to Louisiana to Houston, Texas, to Tulsa and Oklahoma City, to Illinois, Kentucky, Michigan, Ontario and Quebec, and all points in between: South Carolina, Virginia, Massachusetts—the whole eastern seaboard.

Descriptions of the object and its motion varied, but a general picture soon emerged. It was called, in turn, a pinpoint, a moving spiral, a glowing cloud, and a big ball of fire. In Houston, Don Stockbauer described an orangish nebulosity surrounded by an irregularly shaped white cloud elongated vertically, with a dim starlike nucleus. Brenda Newton of Rochester, New York, recalled: "It started to get bigger and it had a tail. By the time we got out of the truck, it had begun to spiral. It lasted for a few minutes, then became like a dim star and floated toward the west." The vice president of the Syracusan Astronomical Society (New York) said it resembled a "reflection of the moon off a cloud, but it was very iridescent, very vivid." Wayne

James Oberg is a computer engineer, the author of many books on space, and a member of CSICOP's UFO Subcommittee.


Japanese put satellites into orbit
TOKYO (UPI) — A new Japanese rocket carried two satellites into orbit Wednesday on its first flight, proving the
Dazzling light show puzzles astronomers
Many in eastern U.S. see mystery lights
Press & Sun-Bulletin
light in sky baffles experts
About the photo
UFO perplexes officials
SYRACUSE, N.Y. (AP) — Residents of western New York

Madea, an amateur astronomer in northern Maine, saw a bright starlike object emit a luminous, rapidly expanding donut-shaped cloud; through a telescope Madea saw "a pinpoint of light, like a satellite, traveling with the cloud."

As it turned out, amateur radio listeners—"hams"—were also receiving radio signals from space at that very moment. And that was the key that led many independent observers to solve the apparition quickly and accurately. Others did it the hard way, as I did, with the application of basic principles of spaceflight and orbital motion.

My involvement began at noon, August 13, when, at a "brown bag" luncheon meeting of astronomy enthusiasts, a report of a bright light in the eastern sky, seen from Houston, was discussed. Returning from lunch, I received a phone call from David L. Chandler, a writer for the *Boston Globe* with whom I had discussed other spaceflight stories months before. He filled me in on the sightings, and I suggested he check about space launchings, particularly the Japanese launch (which I had also learned of that morning). At first there was difficulty in ascertaining the exact launch time (International

Date Line, and confusion at the Japanese representative's office over EST vs. EDT), but an hour later, armed with a good liftoff time and with known orbital inclination and period, I was able to produce a hand-calculated map that showed the object heading up the East Coast at about 10 P.M. EST. Its altitude was about 1,500 km (almost a thousand miles), quite high enough for it still to have been sunlit even though the ground below had been dark for more than an hour.

Part of my advantage was a long familiarity with similar apparitions caused by space launches elsewhere in the world, most notably over South America (Soviet launchings from Plesetsk) and Australia (American launchings from Cape Canaveral). So my initial hypothesis about a propellant venting sprang quickly to mind. Such a phenomenon was unheard of over North America, but the new Japanese rocket test was also the first of its kind.

The names of the vehicles involved were a little confusing. The booster was called the "H-1," and it was the first launch. Its second stage was powered by the new "LE5" engine, using super-cold liquid hydrogen as fuel. Two payloads were deployed: an amateur radio satellite variously called JAS-1 (Japanese Amateur Satellite #1), JO-12 (Japan OSCAR 12), or "Fuji" (by the builders); the geodetic mirror satellite, EGP ("Experimental Geodetic Payload"), or "Ajisai" ("Hydrangea Flower"). The booster was launched from Tanegashima Island off Kyushu at 5:45 A.M., JST, August 13 (2045 UT, August 12), after a 14-minute hold. Precise tracking data from NORAD allowed a perfect match of sightings to space vehicle.

I then reported my results to the Smithsonian Scientific Event Network in Washington, D.C.; to NORAD Public Affairs in Colorado Springs; to the Committee for the Scientific Investigation of Claims of the Paranormal (which got me on a Buffalo, New York, radio show that had aired *live* accounts of the UFO on Tuesday evening); to NASA Public Information at the Kennedy Space Center in Florida; and to the MUFON research group in Texas. This in turn resulted in my receiving about 20 additional telephone calls from news media throughout the east.

Chandler's story appeared in the *Boston Globe* (p. 6) on Thursday, August 14. It moved over some national news wire, too, since it also appeared in the same day's *Houston Chronicle* and elsewhere. On Friday, I did an interview with an Associated Press reporter from Louisville, Kentucky, and that story moved nationally over the weekend.

Within a week, the "UFO" was stuffed, boxed, and buried. (It should also have been seen from Central America, the Caribbean, and the northern coast of South America—those reports may dribble in over the next few months.) But it was a marvelous experience for the witnesses and for the analysts, and several interesting points can be raised about "UFO reports" based on this fortuitous experiment.

Several interesting events involved coincidences. Caught up in the excitement, Tim Jones, an air traffic controller in Syracuse, reported three different-

colored lights randomly moving and hovering for 45 minutes (but it turned out he was watching B-52s land at nearby Rome AFB, several hours after the real UFO). His account was carried in the nationwide news media, but the solution rarely was. In Clark County, Kentucky, residents were panicked by an explosion while the light show was going on—but the sheriff later got an anonymous phone call confessing to setting off illegal fireworks. Recalled County Deputy Larry Lawson: "The people said their homes shook and windows vibrated as if there had been an explosion or earthquake. . . . They said the whole sky lit up. All these people weren't imagining or seeing things. Some of them were very terrified over it right after it happened." These illustrate the power of coincidence, in which two concurrent independent events can easily (and erroneously) be integrated into a single unsolvable mystery. Also, the emotions (such as fear) of witnesses are no measure of the authenticity of their original perception.

One other amusing aspect was the wide variety of half-baked explanations offered for the "UFO." Some speculation associated it with the meteor shower, a barium cloud, or a satellite burnup, while other guesses associated it with an explosion of the Japanese satellite. Professor Richard Stoner of Bowling Green State University in Ohio was quoted as saying: "It is caused by little bits and pieces of dust from the comet. They're very small, but if there were a larger piece, an icy piece of material, something about the size of a snowflake, it might well cause something like this. It would vaporize and leave a glowing cloud behind it." Astronomy professor Martha Haynes of Cornell didn't trust the observers: "When people who watch the stars once, maybe twice a year go out and look hard for a while, they're bound to see things they think are strange. . . . When you're in that mind-set anything like the light of a plane on the horizon looks strange." John Bosworth of NASA's Goddard Space Center scored a near-miss when he attributed the reports to glints off the EGP satellite's mirrors, reflecting moonlight: "I suspect that's what they saw," he told a reporter. The National Weather Service and the Seattle-based National UFO Reporting Center agreed "it was some sort of natural phenomenon."

A number of people, however, got it right, and right from the start. Tom Bolton of the David Dunlap Observatory north of Toronto told newsmen it was caused by release of something from a satellite: "The satellite was actually seen in the telescope here and we had a report from an amateur astronomer (who) saw it and saw the release of the material from it—but we're not sure which satellite it was and we're not sure what the material was that was released." A number of amateur radio people also told their local papers exactly the true story: For example, Richard C. Eaton of Fayetteville, N.Y., a retired G.E. engineer, was quoted in the *Syracuse Herald Journal* as suspecting the cloud was part of the Japanese launch.

The spiral form also was intriguing. In Syracuse, amateur astronomer Denise Sabatini reported: "It started out as a pinpoint of light. It was as if it were releasing some type of reflective gas into the air, and as the gas was

released into air, it was as if it was spiraling around the pinpoint of light." The spiral was "like pouring milk into coffee." Astronomer Karl Kamper at the David Dunlap Observatory described the object as starlike surrounded by a small spiral cloud. (He told newsmen the spiral could have been fuel spilling from a damaged satellite and said it must have been extremely high in the sky.) Chuck Barnes, head naturalist at the Troy Farm and Nature Center near Detroit, had been giving an outdoor lecture on meteors when the UFO appeared: "It was glowing like a spiral pinwheel standing on end and moving on a line from southeast to northwest," he told newsmen (the motion was actually from southeast to north*east*); "It appeared to be five or six times larger than a full moon." In Massachusetts, an amateur astronomer watched the plume from the rocket perform two full turns in four minutes, painting the spinning spiral as he watched.

The relevance of these perceptions to other UFO reports is connected with a series of night-time sky spirals seen over China in the late 1970s. While UFO enthusiasts have accepted them uncritically, experienced analysts have voiced the suspicion that they actually involved space launchings (much like the H-I over America on August 12). These intuitive suspicions were encouraged by a recent official Chinese disclosure of the cancellation of the "Windstorm" space booster, which through the 1970s was being developed in competition with the "Long March 3" booster; there were several flight tests, including one unsuccessful satellite launching, although precise dates were not provided. Further disclosures may allow a precise connection between "Windstorm" space shots and the "spiral UFOs" over China.

Another interesting phenomenon was the way in which UFO groups seemed to get a type of description different from those reported to the national news media. Robert Gribble of the National UFO Reporting Center in Seattle got more than a hundred telephone calls, consistently describing an object shooting straight up into the sky until it mushroomed at a certain altitude. ("It seemed to hold in a certain airspace," he recalled, adding "I got *no* reports of it moving across the sky.") Sherman Larson, with the Center for UFO Studies in Illinois, said his group received numerous calls: "In each case, witnesses said an object appeared to have exploded in the sky and then moved into a cloud." In these accounts, subconscious interpretations by the collectors had evidently colored the straightforward, pure perceptions, and without other accounts the stories collected by the UFO groups could well have coagulated into a "true UFO" if the solution had not been published so quickly. This is a long-recognized (but evidently still serious) problem with anecdotal data collection.

All in all, the great cloud UFO of August 12, 1986, was an exciting, illuminating experience, in more ways than one. •

Join us in Los Angeles

for the

1987 Annual CSICOP Conference

This conference is sponsored by the Committee for the Scientific Investigation of Claims of the Paranormal, the California Institute of Technology "Y," and Southern California Skeptics.

The Pasadena Center

Friday and Saturday, April 3 and 4

Keynote Speaker

CARL SAGAN

FRIDAY, APRIL 3

(at the Auditorium Theatre, Pasadena Center)

8:00-9:00 A.M.: Registration

9:00 A.M.-12 NOON

Extraterrestrial Intelligence: What Are the Probabilities?

Moderator: Al Hibbs, Jet Propulsion Laboratory space scientist (ret.), California Institute of Technology

Jill Tarter, research astronomer, SETI Institute, Univ. of California, Berkeley

Robert Rood, associate professor of astronomy, Univ. of Virginia, Charlottesville

Frank Drake, dean of natural sciences, Univ. of California, Santa Cruz

12:00-2:00 P.M.

Luncheon (optional): James Randi, host

2:00-5:00 P.M.

Animal Language: Fact or Illusion

Moderator: Ray Hyman, professor of psychology, University of Oregon

Thomas Sebeok, professor of linguistics and semiotic studies, Indiana University, Bloomington

Robert Rosenthal, professor of social psychology, Harvard University

Gerd Hövelmann, University of Marburg, West Germany

5:00-8:00 P.M.: Dinner Break

8:00 P.M.: Keynote Address

CARL SAGAN

Note: Although CSICOP remains dedicated to the examination of paranormal claims, it is equally devoted to promoting science as the best approach to obtain knowledge about the world. It is in this vein that this conference deals with controversial issues from within contemporary science. Instead of examining whether or not UFO reports reflect extraterrestrial visitation, the first session deals with the possibility of intelligence somewhere in the universe. Instead of focusing on claims that people can communicate without the use of any known physical channels, the second session addresses an equally controversial question about communication: Are primates other than *Homo sapiens* capable of language? The third session deals with controversies in the medical field. Skepticism is as important a tool in the discussion of such issues as it is in the evaluation of claims of the paranormal.

SATURDAY, APRIL 4

(at the Conference Center, Pasadena Center)

9:00 A.M.-12:00 NOON

Medical Controversies

Moderator: Wallace Sampson, M.D., Mountain View, California

Chiropractic Medicine: William Jarvis, M.D., chairman, Department of Public Health Science, School of Allied Health Professionals, Loma Linda University

Holistic Medicine: Austen G. Clark, assist. prof. of philosophy, Univ. of Tulsa

Third speaker to be announced.

12:00-2:00 P.M.: Lunch Break

Concurrent Sessions

(2 separate rooms at the Conference Center)

2:00-3:00 P.M.

Hypnosis, Joseph Barber, M.D., Los Angeles California

Spontaneous Human Combustion: Joe Nickell, technical writing instructor, University of Kentucky, Lexington

3:00-4:00 P.M.

Psychic Fraud: Patrick Riley, detective, Los Angeles Police Department

Astrology: Ivan Kelly, professor of psychology, University of Saskatchewan

4:00-5:00 P.M.

Open Forum: Informal question-and-answer session with members of the CSICOP Executive Council

Saturday Evening

(at the Pasadena Hilton International Ballroom)

5:30-7:00 P.M.: Cocktail Party (Cash Bar)

7:00-10:00 P.M.: AWARDS BANQUET

Chairman, Paul Kurtz

Featuring PENN and TELLER, *Magicians*

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Accommodations: The Pasadena Hilton (a 3-minute walk from the Pasadena Center), 150 South Los Robles Avenue, Pasadena, CA 91101 (Tele.: 818-577-1000). Single $56, double $63.

For further details, contact Mary Rose Hays (716-834-3222), CSICOP, Box 229, Buffalo, NY 14215. (Media representatives should call Barry Karr.)

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Enclosed please find my check to cover:

☐ $75.00 registration for ____ person(s), includes Keynote Address $_____

☐ $29.00 Awards Banquet for ____ person(s) $_____

☐ $12.25 Friday Luncheon at the Conference Center for ____ person(s) $_____

☐ $6.00 for Carl Sagan Keynote Address for ____ nonregistrants $_____

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Does Astrology Need To Be True? Part 1: A Look at the Real Thing

Astrologers complain that critics ignore serious astrology. But recent tests are uniformly negative.

Geoffrey Dean

Given the extraordinary ability of the human mind to make sense out of things, it is natural occasionally to make sense out of things that have no sense at all.

Richard Furnald Smith, *Prelude to Science*

THE MOST POPULAR arguments against astrology are (1) astrological signs bear no relation to the astronomical constellations, (2) astrology is earth-centered, whereas the solar system is sun-centered, (3) astrology is founded in magic and superstition, (4) there is no known way it could work, and (5) why moment of birth and not conception? The astrologer sees these arguments as no arguments at all, because if astrology works then it works, period.

Another popular argument is (6): If astrology can predict the future, why don't astrologers rule the world? Answer: Astrological prediction is far too tedious. To examine the birth charts (horoscopes) of every likely person or city or country in the hope of finding indications to your advantage is simply not practical.

Another more recent argument is (7): Research has shown that newspaper horoscopes and sun signs don't work. Here the astrologer replies that there is more to astrology than sun signs, and he then retires back to his charts convinced that such arguments reveal only ignorance and closed minds.

Unfortunately, these arguments are all too popular and tend to recur

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Geoffrey Dean, a former CSIRO research scientist and currently a technical editor with Australia's major publisher of technical documentation, has been actively investigating astrological claims for the past fifteen years.

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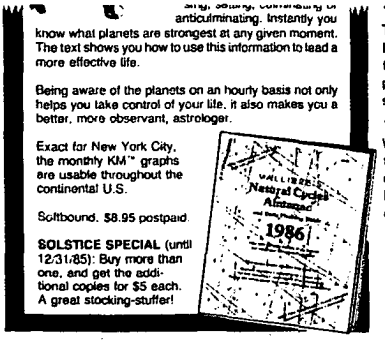
like old jokes. Thus, in their comprehensive review of the evidence for and against astrology, Eysenck and Nias (1982, p. 10) could say, "Much that passes for scientific criticism in the books and articles we have read is in fact little better than defamation and prejudice." Truzzi (1979) writes: "Attacking simple sun-sign astrology is largely a waste of time. . . . A manifesto denouncing newspaper astrology columns could as easily be signed by leading astrologers as by a group of respected scientists."

Recently astrologers in the United States have reacted to such arguments by a Media Watch project (AFAN 1985). This is designed to counter biased media reports on astrology, for example, those due to the "demagogical media grandstanding of self-appointed guardians of public morals and rationality like CSICOP." They point out that critics persistently mistake popular astrology for the real thing and that "just the last couple of decades has produced a psychologically and intellectually more mature astrology, of which the general population and the media remain totally unaware. How, then, are they to discover this, if we don't let them know?" A good point.

Obviously if we are to rise above the present shouting match we have to address astrology (the real thing, not popular nonsense) on the astrologers' terms. We have to go beyond the *popular* astrology of fairground tents and newspaper columns and seek out the *serious* astrology of consulting rooms and learned journals. It is not hard to find. In Western countries roughly 1 person in 10,000 is practicing or studying serious astrology (Dean and Mather 1977, p. 7), which is about the same as for psychology. In Western languages, serious astrology is currently the subject of more than 100 periodicals and about 1,000 books *in print* (1 in 2,000 of all books, or about the same as for astronomy), of which about half are in English. Since 1960 the annual output of new titles has doubled every ten years, at which rate the year 2000 will enjoy ten new astrology books every week, excluding almanacs and sun-sign books. Something this popular is clearly entitled to impartial investigation, especially since astrology has a solid core of testable ideas. We do not have to accept astrology on faith.

Unfortunately investigators of the real thing face daunting problems: (1) It takes at least a year to become even tolerably familiar with astrological theory and practice. (2) Competent criticism requires skill in astronomy, psychology, and statistics. (3) Relevant material in an astrological literature totaling some 200 shelf-meters of serious books and periodicals is highly scattered and usually inaccessible via normal library channels. (4) Relevant material in the orthodox literature is equally highly scattered over books, journals, and theses in psychology, education, sociology, and other disciplines, and is often accessible only with difficulty. Given these problems it is not surprising that debunkers with a living to make have taken the soft option of defamation and prejudice. Astrologers of course face the same problems, but they too have a living to make, so it is not surprising that U.S. astrologer Zipporah Dobyns can say that "astrology is almost as confused as the earthly chaos it is supposed to clarify" (Dobyns and Roof, 1983). However, in the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know what planets are strongest at any given moment.
The text shows you how to use this information to lead a
more effective life.
Being aware of the planets on an hourly basis not only
helps you take control of your life, it also makes you a
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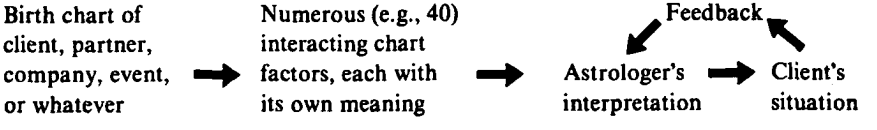
Left: From an ad for a 1986 book on planetary positions aimed at astrologers. *Right:* Some of the more expensive services advertised ten years ago in the now-defunct *Astrology Now.*

past ten years critical surveys have appeared that grapple with these problems, notably Dean and Mather (1977), Eysenck and Nias (1982), Kelly (1982), Culver and Ianna (1984), and Startup (1984). Unfortunately, these surveys do not properly address the real thing because relevant studies did not exist at the time they were written.

This situation has now changed. Relevant studies have now been made, and a consistent picture is emerging, most of it bad news for astrologers. In what follows we take a close look at the real thing, the reasons astrologers believe in it, and the very latest evidence. To be fair to a topic that has been so persistently misrepresented, and to allow adequate citation from a literature that is so difficult to access, this article will be a long one. But the findings have implications that extend to any character-reading technique, such as palmistry and numerology, so even if astrology is not your pet project you should find much of interest. We start with a look at the real thing and why astrologers believe in it.

The Real Thing

In broad terms the real thing boils down to a consultation between astrologer and client where something like this happens:


Birth chart of client, partner, company, event, or whatever
Numerous (e.g., 40) interacting chart factors, each with its own meaning
Feedback
Astrologer's interpretation
Client's situation

The content of the consultation depends on where you are. Eastern astrologers concentrate almost exclusively on fate and destiny, i.e, prediction, for example, see Perinbanayagam (*1981*). But for every Western astrologer who concentrates on prediction there are probably another two who concentrate on psychology and counseling. Thus the popular view of Western astrology as consisting of prediction and nothing else is incorrect. Indeed, many astrologers

eschew prediction; for example, the late Dane Rudhyar (1979), recognized as the leading U.S. proponent of humanistic (person-centered) astrology, says: "I am only interested in astrology as a means to help human beings to give a fuller, richer meaning to their lives. . . . I see no value in the prediction of exact events or even of precise character analysis." Rudhyar's approach has been critically examined by Kelly and Krutzen (1983), and their conclusions are cited in Part 2.

The chart interpretation itself is governed by the cardinal rule that no factor shall be judged in isolation. As noted above, a typical chart contains about 40 interacting factors, each with its own individual meaning, all of which will be relevant to the interpretation. (This total represents only the most basic factors, namely, planets, signs, houses, and aspects; many other factors, such as midpoints and dynamic contacts, can be included, which can increase the total to hundreds or thousands.)

However, as first shown by Miller (1956), our short-term memory cannot juggle more than about 7 ± 2 chunks of information at a time, as will be apparent when you try to dial a 10-digit telephone number. As a result the information content of the chart *always* exceeds our capacity to handle it. In theory the astrologer overcomes this problem by a process called chart synthesis, whereby the relevant factors are balanced against one another on paper. In practice there is little agreement on how this balancing should be done, or even on what factors are relevant in the first place. As we shall see in Part 2, this has predictable consequences.

The Real Thing and Prediction

After any notable event, such as a major earthquake or an assassination, articles appear in astrology journals showing a clear correspondence between the event and its astrological chart. However the correspondence means nothing unless it can predict the event in advance. This was put to the test at the U.S. Geological Survey by Hunter and Derr (1978), who as part of a general evaluation of earthquake prediction systems invited the public to send in their predictions. The biggest response was from astrologers, with psychics and amateur scientists next. Hunter and Derr analyzed a total of 240 earthquake predictions by 27 astrologers and found their accuracy to be worse than guessing. The same was found for the predictions by psychics and amateur scientists.

Culver and Ianna (1984) surveyed 3,011 specific predictions made from 1974 to 1979 in U.S. astrology magazines, such as *American Astrology,* and found that only 338 (11 percent) were correct. Many of these could be attributed to shrewd guesses ("East-West tension will continue"), vagueness ("A tragedy will hit the eastern U.S. this spring"), or inside information ("Starlet A will marry director B"). After allowing for chance there seemed to be nothing left for astrology to explain. The same was found by Châtillon (1985), who surveyed 30 specific predictions for North America in 1984 made

by Huguette Hirsig, one of Montreal's most famous astrologers. Only two (7 percent) were correct.

Reverchon (1971) surveyed a series of predictions made from 1958 to 1961 in the French astrological journal *Les Cahiers Astrologiques.* They were made by the renowned French astrologer André Barbault, a specialist in such predictions, and concerned the end of the French-Algerian war. As each prediction failed (the end was very protracted), Barbault was able to find further indications. No less than 11 successive predictions were made before the inevitable hit was achieved, thus reducing everything to a "childish game." Reverchon then compared Barbault's predictions of world crises for 1965 (published in 1963) against an independent list of 105 major world events for that year. There were 5 hits vs. 8 expected by chance. Specific predictions involving a dozen world leaders included many "high quality blunders"; for example, Kennedy would be reelected in 1964 (he was assassinated in 1963), Krushchev would remain in power until 1966 (he was deposed in 1964), de Gaulle would resign in 1965 (he was reelected), and both Erhard (Germany) and Wilson (UK) would enter a decline (both were reelected). Reverchon concluded, "What most surely appears . . . is the perfect inanity of the astrological undertaking . . . what was announced did not happen, what happened was not announced."

Of course it may be that the specific predictions involved in these four surveys are more difficult than those made in a personal consultation, which may be concerned only with general trends. But, as pointed out by Culver and Ianna, astrologers who make such predictions presumably feel competent to do so; hence there is no reason to suppose that the results are not typical of astrologers generally. For a rare description of a typical technique at work see Stearn's (1972) account of a U.S. astrology class held in 1970; the astrologer makes numerous predictions for Richard Nixon, including "unprecedented popularity . . . peaking in 1975" (Watergate occurred in 1973; Nixon resigned in 1974).

Dean (1983) analyzed 18 years of Nelson's daily forecasts of shortwave radio quality and found no support for Nelson's quasi-astrological claim that planetary positions correlate with radio quality. Now radio quality is quantified into numbers to avoid guesswork, and Nelson's technique (which is based on the angular separation between planets) is by astrological standards almost embarrassingly simple. Yet for 30 years Nelson was convinced he saw a correlation that in fact did not exist. So we should not be surprised that astrologers, working with generally vaguer events and far more complicated techniques, can see correlations even if none actually exists.

The astrologers' response to these five surveys, which are the only ones I know of, has not been to generate surveys of their own. Instead there has been either silence or brusque dismissal, such as that by a reviewer in the Canadian astrological journal *Fraternity News* (1986), who dismissed Culver and Ianna's entire book as "not even good objective criticism." Of course it could be argued that this is a legitimate response for the two in three Western

THE LECTURERS. THE BEST IN OUR WORLD!

Shanks, Tom
Aspects, Harmonics, or Diurnal Position: Research Review

Simonsen, Mary Lou
Da Vinci: "Last Supper and the Zodiac"

Somerfield, Barbara
Hotel Negotiation and Site Selection

Starck, Marcia
Earth Mother Astrology

Starck, Batya
Weight Control—Part II: Indicators of Compulsive Eating
Weight Control—Part I: You're Not a Yo Yo

Steinbrecher, Edwin C.
How To Plug Your Relatives Into Your Natal Horoscope
Inner Guide Meditation

Stone, Diana
Astrology Above: Homeopathy Below

Sullivan-Seale, Erin
A Journey From The Sun To Pluto
Venus Retrograde: Cycles of Reflection
The "Eyes" of the Unconscious

Tanzer, Elliot
The Sensual Zodiac—Sexual Energy Keys
Guided Imagery of Planets

Tebbs, Carol
Let's Apply Some Method to This Madness
Locality Chart
Art and Astrology

Thompson, Angel
Eclipses: The Pattern, The Prophecy
The Astrologer as Shaman
Movement in the Horoscope

Tyl, Noel
Changing Your Horoscope
Techniques of Counseling

Ungar, Anne
Forecasting II
Horary Astrology, Part II

Van Toen, Donna
Astrological Correlation of Gems
Introduction to Esoteric Astrology

Wangemann, Edith
Research on Identical Twins

Wehrman, Joyce
What Makes a Winner
Solar Returns and Sexual Needs

Weingarten, Henry
Panel: Professional Education of Astrologers
Future of Astrology: Computers & Artificial Intelligence

Wickenburg, Joanne
Vocational Astrology
The Lunar Nodes

As shown by this sample of topics from 18 of the more than 110 lecturers from 11 countries at an astrology conference, astrology today embraces just about everything.

astrologers who eschew prediction in favor of psychology and counseling. So the rest of this article is addressed to their point of view.

The Real Thing and Counseling

Here the term *counseling* is used in accordance with the following classification of astrological consultations due to Rosenblum (1983, pp. 33-44):

A. Chart reading. Usually one session only; astrologer talks, client listens.

B. Counseling. One or several sessions; client participates in a dialogue. Involves inquiry into client's life; addresses short-term problems.

C. Therapy. Regular ongoing sessions; client has major long-term problems and requires help to regain control of life. Astrologer has (or should have) orthodox qualifications in psychotherapy.

Each type blends into the next to form a continuum, so the classification is basically one of emphasis. Many astrologers consider A to be unhelpful and potentially harmful because the client is passive and dependent on the all-knowing astrologer. But if clients are merely curious about astrology, A may be all they want. In occurrence, A and B are probably roughly equal, while C is rare, probably roughly 0.5 percent of B. For these reasons I have focused on B as the real thing.

Lester (1982), a professor of psychology in the United States, visited an astrologer, talked to clients of astrologers, and surveyed astrological writings. He concluded: (1) Astrologers play a role similar to that of psychotherapists. (2) People consult astrologers for the same reason they consult psychotherapists, but without the stigma the latter may entail. (3) Clients get empathy,

advice, compliments (which increase self-esteem), and positive comments about possible future traumas, all of which amounts to supportive psychotherapy.

Skafte (1969), a psychologist and counselor, tested the effect of introducing popular astrology (and palmistry and numerology) into personal and vocational counseling, for example, by saying "a person born under your sign is supposed to enjoy travel—does this sound like you?" The words were chosen to avoid implying validity and to promote dialogue. She found that: (1) this provides a focal point for discussion that often stimulates clients to talk openly about themselves, (2) mutual interest in an unconventional activity quickly creates closeness and rapport that would otherwise take many sessions to establish, (3) the focus on individual qualities (as opposed to, say, impersonal questionnaires), meets the client's need to feel special.

Clearly, when used in this way, astrology can be valuable without needing to be true. Skafte's first point about astrology's providing a focus is amply confirmed in astrology books and lectures, which often contain surprisingly little astrology. Thus an exposition by a good astrologer on the special problems faced by Neptune in each house, or how to live with a T-square or a void-of-course moon or a Splash pattern or a heavy fifth harmonic, will contain beneath the jargon a sensible and insightful commentary on human behavior that any caring person of rich experience could deliver. In such cases astrology, without needing to be true, acts as an organizing device for the otherwise unmanageable smorgasboard of human experience.

Mayer (1978), a humanistic psychotherapist and astrologer, extends Skafte's sun-sign approach to include all of astrology. His concern is to help clients confused about their identity and seeking a meaning in life. He argues that this is difficult via the orthodox personality theories used to guide therapy, but easy via the imagery and complexity of astrology without requiring it to be true. For this purpose he proposes a new kind of astrology for which no claims of validity are made, and which is contraindicated for clients opposed to nonrational approaches or overinclined to fantasy. However, therapists and clients seem unlikely to accept a tool of this complexity unless some underlying truth is assumed, in the same way that we would resist using English if it required us to speak in riddles.

Laster (1975), an educational psychologist and astrologer, makes the pragmatic point that the many people who believe in astrology can be reached on common grounds of faith by counselors familiar with astrology, just as Jews can be better reached by Jewish counselors than by non-Jewish ones. On this basis the validity of the belief—whether Jewish or astrological—should not be an issue if the belief helps to establish rapport between client and therapist. Here Laster is in effect redefining astrology as a religion, so his point becomes invalid if the client seeks earthly guidance divorced from spiritual understanding. I say more about utility vs. validity later.

Wedow (1976), a sociologist, made tape recordings of counseling sessions with eight astrologers to find out what happens when they make a wrong

statement about the client. She found that they gave one or more of the following explanations:

1. Client does not know himself. 2. Astrologer is not infallible.	This shifts the blame from astrology to the participants.
3. Another factor is responsible. 4. Manifestation is not typical.	This puts the blame on the ambiguity of the birth chart.

Wedow notes that such explanations make the whole process nonfalsifiable, and that the participants seem to be unaware of this nonfalsifiability. Hence once the session has begun the end result can hardly fail to maintain astrology's credibility.

Note that this nonfalsifiability arises not from the chart factors themselves, which are in principle testable and therefore falsifiable, but from what astrologers do with them. The process is described so vividly by Hamblin (1982), an astrologer critical of current practice and later chairman of the U.K. Astrological Association, that he is worth quoting in full:

> If I find a very meek and unaggressive person with five planets in Aries, this does not cause me to doubt that Aries means aggression. I may be able to point to his Pisces Ascendant, or to his Sun conjunct Saturn, or to his ruler in the twelfth house; and, if none of these alibis are available, I can simply say that he has not yet fulfilled his Aries potential. Or I can argue (as I have heard argued) that, if a person has an *excess* of planets in a particular sign, he will tend to suppress the characteristics of that sign because he is scared that, if he reveals them, he will carry them to excess. But if on the next day I meet a very aggressive person who also has five planets in Aries, I will change my tune: I will say that he *had* to be like that because of his planets in Aries.

Hamblin notes that this gives astrologers an inexhaustible reserve of explanations for even the gravest difficulties. It also reduces to inutility claims like that of Metzner (1970), a psychologist and astrologer, that chart factors in combination are "probably better adapted to the complex variety of human nature than existing systems of types, traits, motives, needs, factors, or scales." More subtly, it kills off the very understanding that the real thing is supposed to promote and replaces it with tokens of understanding that have value only in an economy of free-floating, all-purpose astrobabble. We may ask how the previously cited Media Watch astrologers could believe that this kind of thing is "psychologically and intellectually more mature." As we shall see in Part 2, due to the nature of astrology and of the human mind, the answer is, "Very easily."

The Dark Side of Astrology

Steiner (1945), a medical and psychiatric social worker, made a remarkable

survey of U.S. astrologers, palmists, numerologists, Tarot readers, and similar "consultants." The survey took 12 years, during which time she posed as a consultant to find out what people's troubles were, and visited consultants (including 40 astrologers) posing as a client to find out what their advice was like. She concluded: (1) There is no agony like emotional turmoil. People will seek relief anywhere, usually quite uncritically. (2) In general, consultants were utterly untrained for professional practice. Many were unscrupulous and dishonest. (3) No technique was better or worse than the others. Yet all consultants claimed success for their particular system.

That was the situation in the United States in the 1930s and early 1940s, and it could only improve. Thus 25 years later L. Sechrest and J. Bryan (1968) consulted 18 U.S. astrologers who advertised mail-order marital advice. They found that the advice bore no discernible relationship to astrological principles but was always realistic, and was usually direct, clear, vigorous, personal, and friendly. They concluded that the advice was not likely to be damaging and, because it was friendly and cheap, was even a great bargain. In 1978 a survey of 75 astrologers found that they and their clients were mostly solidly middle class and well educated (Koval 1979). The same year, for a consultation of one to two hours, plus up to three hours of preparatory work, the average fee for 276 U.S. astrologers was $40 to $50 (American Federation of Astrologers 1978a), which per hour was about a third of the average rate for psychoanalysis. Larner (1974), an astrologer and New York businessman, divides U.S. astrologers into the following five types but without indicating their relative numbers. The costs are those of a consultation in 1974: (1) The sun-sign astrologer $2 to $10. Typically the gypsy lady with a storefront in the low-rent district or with mail-order services advertised in newsstand astrology magazines. (2) The large-volume astrologer, $5 to $10. Found mainly at parties, resorts, and fund-raising events. (3) The kitchen astrologer, $10 to $25. Typically the hobbyist, usually a housewife, invariably conscientious and best value for money. (4) The professional astrologer, $25 to $100. Usually has training, experience, expenses, and overhead. Best judged by reputation. (5) The flamboyant astrologer, $250 to $1,000. As (4), but gives personal service and magnificently presented charts to wealthy clients like film stars.

Today most astrological organizations hold examinations, award diplomas, and have codes of ethics. What they do not have is effective regulation, which means that anyone can become an astrologer just by saying so. With or without codes of ethics, some astrologers do play God, or make irresponsible predictions, or intrude their hangups, all of which can have traumatic effect. For example, Rudhyar (1979) says, "I have received many letters from people telling me how fearful or psychologically confused they had become after consulting even a well-known astrologer and being given biased character analyses and/or predictions of illness, catastrophe, or even death." For a personal account of such an experience see L. Wallace (1978). For a discussion of the various sins to which astrologers are prone during a consultation, see

Rosenblum (1983, pp. 120-128).

Of course people can suffer just as much from parents, teachers, and clergy, so it would be unfair to single out astrologers, especially as they are much easier to avoid. My own experience, and my canvassing of informed opinion, suggests that the proportion of astrologers who are irresponsible is something like 1 in 20. Since astrologers are about 50 times less numerous than lawyers (Dean and Mather 1977, p. 7), the problem, while distressing, is hardly of epidemic proportions. This of course may not be the case if we include fairground astrologers and newspaper columnists, whom most serious astrologers regard as irresponsible by definition.

The reasons people believe in astrology have been surveyed by Fullam (1984) using all available opinion polls from Western countries. She concluded that people believe in astrology because it is satisfying on many levels from the trivial to the profound. Some use it as entertainment. Some use it to solve problems ("Is he right for me?"). Some use it to discover the sacred meaning of life. And of course some use it to make money. In other words, different people believe in astrology for different reasons. The interesting question of how such beliefs arise in the first place will be discussed in Part 2. For the moment let us look at why *astrologers* believe in astrology.

Why Do Astrologers Believe in Astrology?

The arguments commonly put forward by astrologers to support their belief in astrology have been critically examined by Kelly et al. (1986), who concluded that none of them stood up to inspection. The arguments and (in parentheses) responses by Kelly et al. are briefly as follows.

1. Astrology has great antiquity and durability. (So has murder.)
2. Astrology is found in many cultures. (So is belief in a flat earth.)
3. Many great scholars have believed in it. (Many others have not.)
4. Astrology is based on observation. (Its complexity defies observation.)
5. Extraterrestrial influences exist. (None are relevant to astrology.)
6. Astrology has been proved by research. (Not true.)
7. Non-astrologers are not qualified to judge. (So who judges murder?)
8. Astrology is not science but art/philosophy. (Not a reason for belief.)
9. Astrology works. (The evidence suggests otherwise.)

Of these nine arguments none is more common, more simple, and more disarming of criticism than "astrology works." So let us examine this point in more detail with a look at the views of astrologers.

The late Charles Carter (1925), the leading U.K. astrologer of the 1930s and noted for exceptional clarity of expression, says: "Practical experiment will soon convince the most sceptical that the bodies of the solar system indicate, if they do not actually produce, changes in: (1) Our minds. (2) Our feelings and emotions. (3) Our physical bodies. (4) Our external affairs and relationships with the world at large."

Edith Custer (1979), editor of a U.S. quarterly magazine devoted exclusively to letters from serious astrologers, says, "Whether the scientific world accepts or rejects astrology makes it no less a valid tool for me to work with. . . . I know it works and I am satisfied with that."

Dane Rudhyar (1970), guru of person-centered astrology, says, "If, after having studied . . . his . . . birth chart, a person . . . is able to feel a direction and purpose . . . in his life . . . then astrology is 'existentially' proven to be effective in this particular case. It 'works'—for him."

Rudolf Smit (1976), founder editor of the Dutch astrological journal *Wetenschap & Astrologie* (Wetenschap = Science), says: "On the inevitable question 'why does astrology work?' even the most intelligent and experienced astrologers are obliged to be pragmatic: Don't ask them how it works, because they know only that it does work, which is why they use it."

The most popular vague assumption, and the subsequent circular argument, is that everything in the universe is interrelated, so that in effect we can tell what our fingers are doing by looking at our toes. For example, Zipporah Dobyns (1986, p. 33), one of the few astrologers with a Ph.D. in psychology, says: "But, increasingly, modern astrologers are realising that the correspondences are symbolic. The sky is part of the universe, and it is visible, so it is a convenient way to see the shared order."

The idea of "shared order," more usually called *synchronicity,* is not without a certain conceit. As Mackay (1852) noted, "How we should pity the arrogance of the worm that crawls at our feet, if . . . it . . . imagined that meteors shot athwart the sky to warn it that a tom-tit was hovering near to gobble it up." Astrologers are not aware of this but argue that, because astrology works (note the circular argument), theirs is not to reason why.

What are the views of orthodox professionals who use astrology? Dr. Edward Askren (1980), a psychiatrist who was once skeptical of astrology but who now uses it in his practice, says, "Like ethics or theology, astrology presents at its best a coherent explanation of what is, and broadly indicates how an individual does in life and how he . . . may relate to the rest of creation." He describes the benefits of using astrology in his practice of psychotherapy as follows: "[Astrology provides] me with a different view of personality—one that seems to be more congruent with the world. . . . By giving me a new set [of analogies] with which to perceive, it helps me to see things I would not see otherwise. My patients have responded—some negatively, some positively, some gradually positively."

Dr. Bernard Rosenblum (1983, pp. 3-4), a psychiatrist who uses astrology in his practice, describes his first visit to an astrologer at age 41 and incognito. He was told about his conflicts, talents, intellectual style, emotions, parental images, and much more, including the opinion that he was, or should be, a psychoanalyst or psychiatrist: "It was all pointedly meaningful to me—and surprisingly specific. The usual criticism of astrology, that it produces a variety of generalities that can refer to almost anyone, was suddenly, in my mind, relevant only to newspaper and magazine types of astrology and no

longer to the experience of going to a competent astrologer. . . . Now that I have studied astrology myself, I am well aware of the excellent contributions astrology can make to human understanding."

Not all professionals come away from astrology with such glowing opinions. Dr. Anthony Stevens, a psychiatrist who assessed chart readings as part of Parker's (1970) investigation of astrology, concluded that astrology is a delusional system comparable to organized religion and is used to impose order on private chaos. Thus astrologers drag their clients into "a shared paranoia, a *folie à deux,* in which both astrologer and client subscribe to the same delusional system."

To illustrate the understanding that astrology can bring, suppose you are experiencing emotional ups and downs (or restlessness or problems at work or whatever). Your astrologer points out that your chart has Mars aspecting Venus, or the moon in a Fire sign, or a lack of Earth, or transiting Uranus in the fifth house, or any of a hundred other things, all of them indicating ups and downs and thus confirming your situation. The astrologer then explains the strengths and weaknesses of these factors and how they interact with other chart factors, and shows how any liabilities can be minimized or even turned into assets, for example, by avoiding situations abrasive to your sensitive Neptunian nature, or by concentrating on the fine communicative skills shown by your strong third and ninth houses. In effect your situation is repacked and put into coherent order by the structure of the chart, in the same way that a transactional analyst would repack it in terms of Adult, Parent, and Child. So you see your situation from a new vantage point. Since you have never heard yourself explained in such a simple and appealing way, it is a revelation. You end up reassured, self-aware, and very satisfied with the service, which the astrologer sees as yet more evidence that astrology works.

These examples (and I could have cited many more) illustrate the kind of evidence that astrologers respect most. They see that astrology gives benefit, self-understanding, and spiritual insight. They see that it helps people. They see that it works. And because seeing is believing, they don't care what the critics say—*they know.* What could be more reasonable? But phrenologists said exactly the same.

A Salutary Lesson from Phrenology

Phrenology is a system of intellectual and moral philosophy that is based on reading character from brain development as shown by head shape. Phrenology is now virtually dead, but in the 1830s it was more popular than astrology is today. Like astrology, it encourages you to assess yourself via its principles and act on the findings to achieve harmony with the world. Like astrology, it attracted people of intelligence and a vast literature wherein every criticism was furiously attacked. Like astrology, it flourished because practitioners and clients saw that it worked. For many other parallels see Dean and Mather (1985).

But the claims of phrenology are now known to be wrong. Character is not indicated by brain development because the brain does not work like that, at least not in the way and to the extent required by phrenology (Davies 1955; Flugel 1964). So a certain head-shape cannot mean what it is supposed to mean. Yet millions of people could agree that phrenology works, just as millions of people today agree that astrology works. But could millions of people be wrong? As discussed next, the answer is yes and no.

It All Depends on What You Mean by 'Works'

We have seen that astrologers believe in astrology because it works. But as Eysenck and Nias (1982, p. 211) point out, it all depends on what you mean by *works.* If by *works* you mean *is helpful,* the popularity of serious astrology leaves no doubt that it does indeed work. But this is hardly surprising—after all, to most people astrological ideas have undeniable beauty and appeal, the birth chart is nonjudgmental, the interpretation is nonfalsifiable, and astrologers tend to be nice people. In a society that denies ego support to most people, astrology provides it at a very low price. Where else can you get this sort of thing these days?

But if by *works* you mean *is true,* this changes the situation entirely and brings us back to the question of utility vs. validity. It is one thing to say we can learn about ourselves by following the interaction of Mars and Venus like toy soldiers in a psychological war game and quite another to say that these interactions are related to what Mars and Venus were doing at our moment of birth. As one astrologer who recognizes the problem put it, "Any good I've done as a consultant, and I have done some good, had less to do with my being a good astrologer than with my being a good person" (Ashmun 1984).

This explains the conflict between critics and astrologers: Critics see a lack of factual evidence and conclude it doesn't work, whereas astrologers see that it helps people and conclude it does work. Both are right—and both are guilty of not wanting to know what the other is talking about. The situation is not helped by the typical astrologer's attitude toward factual evidence so well described by Levy (1982), who runs Australia's largest computerized chart calculation service: "I often get the feeling, after talking to astrologers, that they live in a mental fantasy world, a kind of astrological universe where no explanations outside of astrological ones are permitted, and that if the events of the real world do not accord with astrological notions or predictions, then yet another astrological technique will have to be invented to explain it."

In such a situation the crucial question is not whether astrology is true but whether it *needs* to be true. We have already seen that, at the trivial level, the answer is no (Skafte 1969). But what about the real thing? To find out we must first understand some more about birth charts.

The Importance of an Accurate Birth Chart

Astrology postulates a correspondence between birth chart and person. Or as above, so below. Some astrologers, like Charles Carter, hold the traditional view that the birth chart indicates character and destiny. Others, like Dane Rudhyar, see it pertaining only to the individual's potential. (Here I will ignore the problem that, because potential can never be determined, it is impossible to know whether such astrology works.) Either way, an accurate birth chart is essential—a point confirmed by astrological organizations in their codes of ethics, as shown by the following typical example from the American Federation of Astrologers (1978b): ". . . A precise astrological opinion cannot honestly be rendered with reference to the life of an individual unless it is based upon a horoscope cast for the year, month, day and time of day plus correct geographical location of the place of birth."

If an accurate birth chart is essential, then the wrong chart should ruin everything. But if the chart makes no difference, the rationale for astrology disappears—and astrology does not need to be true. So let us now put this point to the test.

Right Charts vs. Wrong Charts

Right and wrong charts have been compared in seven independent studies, nearly all of them made in the past five years, in which subjects had to decide which of two or more chart interpretations fitted them best. One interpretation was of their own chart, the rest were those of other subjects picked at random. Care was taken to ensure that direct clues, such as birth data, were excluded and that indirect clues, such as sun-sign descriptions, were either excluded or were the same in all interpretations. According to astrology the subjects should certainly tend to pick their own charts. But the results (Table 1) show that in every study the subjects performed no better than chance. In other words, they were just as happy with wrong charts as with right ones. This suggests that the perceived validity of astrology is an illusion.

The results cannot be explained by poor interpretation. Thus, in the study by Dwyer (1986), who at the time was a tutor in the internationally known Mayo School of Astrology, the method had previously been progressively refined via a panel of 30 control subjects to maximize accuracy. And in the Carlson (1985) study the interpretations were individually prepared by experienced professional astrologers judged by their peers to be highly competent. Yet in both studies the results were at exactly chance level.

Nor can the results be explained by the subjects' not knowing themselves. Thus, in the study by Tyson (1984), the test was also given to someone who knew the subject well (usually a parent), but the results were just as negative—3 hits vs. 3 expected by chance. Ianna and Tolbert (1985) tested the ability of U.S. astrologer John McCall to pick the correct chart out of four from the subject's face and build, which of course avoids the problem entirely. McCall

TABLE 1

Can Subjects Tell Right Charts from Wrong Charts?

Study	Note	No. of Subjects	Charts per Subject	No. Picking Own Chart Observed	No. Picking Own Chart Expected By Chance
Cummings et al. 1978	1	12	3	4	4
Neher 1980	1	18	6	3	3
Lackey 1981	2	38	2	19	19
Dwyer & Grange 1983	3	34	3	10	11
Tyson 1984	1	15	5	2	3
Carlson 1985	1	83	3	28	28
Dwyer 1986	3	30	2	15	15
Total		230		81	83

Answer: Unanimously no. The overall trend is not even in the right direction. The interpretations were prepared by (1) one or more professional astrologers; (2) the experimenter, from books; or (3) a computer. They were usually based either on the whole chart or on the whole chart minus long-term factors, such as the sign position of planets beyond Jupiter.

was confident of success (he had previously put an ad in the *Washington Post* challenging scientists to test him) and was completely satisfied with the test conditions. Yet he scored only 7 hits for 28 subjects, no different from the 7 expected by chance, and scarcely better than his score of 1 hit for 5 subjects obtained in an earlier test (Randi 1983).

We may note that, if subjects do not know themselves, then valid personality questionnaires could not exist; see Cronbach (1970). Nor could astrologers ever know that astrology works. Or as one indignant correspondent to *American Astrology* put it, "I believe that I know myself better than that conceited Virgo astrologer did" (Shivers 1983).

And, indeed, when the approach used in Table 1 is applied to personality inventories, the correct profile tends to be chosen; for example, see Greene et al. (1979) and the results of Grange (1982) cited in Part 2. This shows that, while self-knowledge may not be 100 percent, it is sufficient for the present purpose. At any rate, the results of Table 1 are consistent with examples in the astrological literature where the interpretation fits the subject perfectly but the chart is subsequently found to be wrong (Dean and Mather 1977, pp. 28-31). Such examples are often very telling, as this one from the late Piet Hein Hoebens (1984) demonstrates: "In my newspaper column in *De Telegraaf* I have occasionally discussed astrological topics. Mr. Gieles, a well-

known astrologer in The Hague, responded to my critical writings by publishing my horoscope, which, not surprisingly, revealed that the stars and planets had conspired to make me a critical journalist hostile to Mr. Gieles's claims. Everything fitted beautifully except one detail—poor Mr. Gieles had used the wrong birth date!"

The Problem of Words

One problem with testing astrological interpretations is that they tend to be wordy and rambling. For example, the interpretations tested by Carlson (1985) averaged just over 1,000 words each, of which the following excerpts are typical: (1) Emotions tend to be erratic especially when communications break down. (2) You want to belong and fit it, at the same time you want to be noticed. (3) You can hold jobs of singular authority when in command. (4) You have a deep mind but tend to daydream when bored and need the discipline of education to stimulate your versatility. [Total: 56 words.]

Trying to choose between three 1,000-word interpretations in such a style is conducive to mental paralysis; the mind cannot cope. This does not invalidate Carlson's study—the interpretations were prepared by highly competent astrologers, so it is a fair test of actual professional practice. But it does leave us wondering what would happen if (1) wrong charts were used in an actual consultation, and (2) the interpretations were made especially concise to facilitate detection of their wrongness. Would the client notice? I decided to find out.

Part 2, with more tests of the real thing and more bad news for astrologers, will appear in the next issue. We will gain insight into why astrology is not likely to go away. And a famous legal case will be demystified.

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Homing Abilities of Bees, Cats, and People

Many animals have exotic navigation abilities, but some stories about pets and people have another side.

James Randi

WE ARE ALL familiar with stories of seemingly miraculous performances by pets who return home after having been lost or abandoned at great distances. Rough terrain, fierce weather, and natural barriers of formidable proportions are said to have been overcome by dogs, cats, and other wee beasts who stagger in worn and half-starved months after they were last seen by their owners. Such odysseys are basic material for the *Reader's Digest* and juvenile thrillers, and doubtless many are true.

It is obvious that the ability to navigate is a basic survival mechanism for many species. Adults foraging to feed their young, individuals needing to return to shelter, creatures that belong to community complexes, and even simpler forms of life that require some mechanism to direct them toward supportive, established habitats, find "homing" systems of great value.

It has been found that some animals can measure the elevation of the sun and calculate aspects of their position by allowing for elapsed time on their biological clocks. Shadow direction can assist this calculation. Birds and insects use these methods, along with direct recognition of landmarks, to navigate. It is probable that they can also store data on each portion of their trip and at each change in direction to arrive at their actual linear distance and direction from any given point. But, obviously, all this would require a clear day, when the sun is visible.

Recently, researchers at Princeton, Cornell, SUNY-Albany, and Caltech, inspired by the discovery of bacteria that are equipped to follow the earth's magnetic lines of force for survival purposes, have also established the existence of a remarkable sensory system in honey bees, sharks, pigeons, tuna, and porpoises, among other animals. It is a magnetic organ consisting of a tiny "lodestone" of magnetite located at about the position where these

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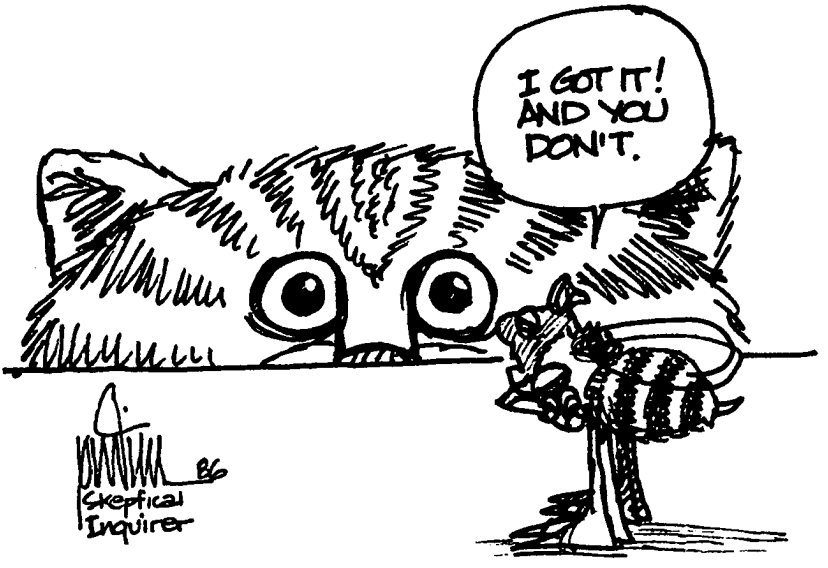

creatures would have, or do have, a nose. If there is no sun available for a navigational "fix," it seems that some animals fall back on this built-in compass to find their respective ways about. And, not surprisingly, humans have this device installed as well, in the ethmoid bone of the nose. But in humans it seems not to be connected up, or perhaps it has lost its power from disuse.

Dr. Robin R. Baker, of the University of Manchester in England, believed that he had proved humans could use their magnetic sensing system to "home" effectively. Baker had loaded blindfolded student subjects into a van, driven them to an unknown location, and then unloaded them one at time to see if they were able to point north. His resultant vector diagrams seemed to show clearly that the subjects were significantly able to do so.

When I was invited to Princeton to witness attempts to replicate Baker's findings, he was present. At that time I saw films he'd prepared during his UK experiments, and I was shocked to see that he'd left substantial gaps in his security design, which, to my mind, would have allowed subjects to use quite ordinary sensory inputs (consciously or unconsciously) to determine direction. Performing in direct sunlight, blindfolded subjects could easily sense the solar radiation on their bodies and could thereby know direction. The blindfolds Baker used were rudimentary at best, and peeking was quite possible. In common with so many other researchers, Dr. Baker apparently had not taken into consideration the fact that subjects can and will cheat—purposely or not.

At Princeton, the blindfolds were excellent. The problem with solar radiation was done away with as well. Baker, brought in to witness the tests halfway through, objected strongly when he found I was present. He suggested

that I might attempt to sabotage the experiments. I had no such interest and no intention of doing so. He pointed out that I might have a large magnet in my attaché case, and I of course offered to remove it from the vicinity. When he waived that offer, I insisted upon removing it, lest he later claim (if the tests failed) that he'd been right to suspect such a device.

Baker's experimental design called for randomly assigned packets attached to the head of each subject. Some were bar magnets that had magnetic fields several times the natural magnetic field of the earth; others were quite simply brass "dummy" magnets. Subjects wearing the real magnets would thus constitute a control group and should be unable to use any biological magnetic sensing system. This is excellent scientific procedure—if the subjects and the persons who examine the data do not know which are controls and which are proper subjects. At one point during the Princeton tests, I saw a student subject, blindfolded and ready to board a van, wearing headphones. I brought this to Baker's attention, and he decided to ignore this slight variation until I pointed out that this student would now inescapably be a control subject, having powerful magnetic sources at each side of his head.

The tests at Princeton failed to replicate Baker's results.

Following the failure of others to provide him with suitable validation of his findings, Baker designed a spinning-chair technique to test for human magnetic sensing. Dr. Joseph Kirschvink of Caltech improved upon Baker's design substantially, using large Helmholtz coils instead of the bar-magnet controls, since I'd observed during the Princeton tests that the real magnets readily adhered to the interior metal surfaces of the van, thus tipping off participants that they were control subjects. Kirschvink also isolated all instrumentation facilities from the chair set-up as a further precaution. After extensive tests over a long period of time, he established that the humans he used in his experiments had no magnetic sensing abilities whatsoever.

The strange element in all this experimentation is that Baker's control methods (aside from the small problem I'd discovered with the bar magnets) should have provided him with quite adequate safeguards against cheating effects' biasing the results. If his poor security methods had made cheating an element of success, his control subjects should have done just as well as his proper subjects. But they did not. This, coupled with the inability of colleagues to replicate results, constitutes a mystery. Baker's results are thus in the limbo of "unproven" claims, where one can find vast quantities of parapsychological research as well.

Granted that animals should have rudimentary direction-finding systems operating by means of various well-recognized sensory imputs, one tends to believe the stories of stray pets finding their homes. We must take into account the strong tendency of pet-owners to embellish their accounts somewhat but, knowing the possibilities presented by sensing systems honed by millions of evolutionary experiments, it is tempting to accept these tales as true. However, allow me to relate a story that might temper that acceptance somewhat.

When I was a teenager in Toronto, our family was accustomed to spending two weeks each summer in northern Ontario, among the wild woods and lakes that delight summer vacationers. We often would time-share a small cabin obtained through a local rental agency that arranged such matters, so we were able to take a different location each year. On the occasion in question, we went some 150 miles northeast of Toronto and settled into combat with the black flies and marauding chipmunks. We took along our two-year-old tortoise-shell cat "Beep," which we had inherited only a couple of months previously.

At the end of our stay, as we prepared to leave for home, Beep was nowhere to be found. Hours spent calling for her were of no avail, and since she had actually gone missing the night before, we sadly assumed that some denizen in the woods had done her in. We left without locating her. Though we were disturbed by having to do so, since she was a recent addition to the household we hadn't developed as strong an attachment as we might have.

Lo! We were back home for a few weeks when Beep showed up at our back door and walked in as if she'd not been away at all. All the family had one heck of a story to tell, and it even got into a local newspaper. A lone cat, not even a longtime acquaintance of the family, had somehow traveled 150 miles through dense woods, across modern highways and populated areas, over a period of about three weeks, to survive and successfully find us! I ask you, is that not proof of the wonderful abilities of a cat to find its way home, not to speak of its devotion and affection?

As it turns out, the story proves nothing of the sort. That newspaper article was seen by a man from a few blocks away who came by our house to see the cat. He told my father that he had dealt with the same local rental agency we had used, and had rented one of the cabins in the same cluster as ours, following our vacation period. Beep had walked into his cabin one day, hungry and worn. His family had adopted her and brought her back home with them, only to have her vanish the same day they arrived. That was when she showed up at our back door. She had merely come home—with some help.

I would have liked to believe the story about Beep the Wonder Cat. And, had that gentleman not noticed the newspaper article, I would still be using the story as an example of mysterious powers. But facts are facts, and I must surrender wonderment to reality. It is not too difficult a surrender. •

Forum

Metaphysics and Money: A Skeptical View of Creative Abundance

STUART WILDE is a self-styled metaphysician who claims to have discovered a way to blend ancient wisdom with modern technology, to teach you how to create more money in your life. Denise Linn is a reincarnationist who claims to connect you with your past lives to make you more "abundant" in this one.

Wilde and Linn recently toured Australia under the auspices of International Health Promotions, presenting "Creative Abundance" seminars in Canberra, Melbourne, and Sydney. Their blend of metaphysics and hucksterism got considerable attention.

They first appeared on the local ABC-TV "Morning Show" in Canberra. Linn explained that she had become interested in previous incarnations and realized their value as a resource for abundance as a result of a visionary "near-death experience" that led her to radically alter her views about reality.

Wilde's account of his discovery of the secret of "creative abundance" was a little different. Having made a fortune in the rag trade in Carnaby Street in the sixties, he had become filled with the emptiness of material success and set out to discover deeper truths about the meaning of existence. The truth he discovered after his long search seemed very close to the starting point of his disillusionment. The secret to life, he said, lies in making pots of money—indeed, in persuading people to give you as much of it as possible—but it is important not to feel the least guilty about it.

Twenty years ago Wilde made a fortune and felt terrible. Now he is making a fortune and feels terrific. As long as you approach people in the right fashion, he suggested, they will just love to make you rich.

The idea of reincarnation raises a lot of questions, and I posed the following one to Linn on the "Morning Show": Three hundred years ago the population was about one-eighth its present size. So there were just not enough people in the comparatively recent past for everybody alive today to have once *been.* Linn was puzzled by this problem (which had not occurred to her before), but Wilde came to her rescue, suggesting that "other dimensions" provided a convenient source of disembodied souls to resolve the difficulty.

Two days after their TV appearance about 120 people paid $20 each to hear this contradictory blend of Taoist phi-

losophy and North American materialism. Their seminar was slick, polished, and delivered with enthusiasm and panache. Linn conducted the morning session, Wilde the afternoon one.

Problems about reincarnation were swept aside as Linn explained that we are spirits whose purpose is to return bodily again and again "to polish the jewels" that we essentially are. She suggested that many of our hangups are the product of difficulties experienced in previous incarnations. Coming to terms with what we were is, she claimed, a means of coming to accept what we are. To relive is to relieve.

Linn's presentation concluded with an exercise to bring the seminar participants in touch with their previous lives. After a "deep relaxation" preliminary, everyone was invited to imagine themselves at twenty years of age, at ten, at five, at six months, then back to birth and the womb. And then beyond that.

For this participant, the nature of the task changed radically as the exercise progressed. I can recollect, albeit vaguely, experiences at the age of five. Prior to that, I find myself wholly dependent on old family photo albums and reports derived from memories other than my own.

Linn appeared to be aware of this problem. She invited participants, if nothing "came to mind," to "pretend, create, imagine" experiences. A generous range of cues about the kinds of experiences others had reported—those of World War II pilots, Pilgrims, Chinese peasants—provided us with a delineation of the scope of the imaginative exercise.

The participants in this fantasizing appeared quite happy to accept their inventions as genuine reports of previous incarnations. We were, in effect, asked to invent a past life and then to accept the invention as reality.

There were plenty of grounds for doubting the truth of the reports. For one thing, there were a number of anachronisms. ("Roman soldiers," for example, solemnly reported having lived in castles.)

Wilde's afternoon session, an exposition of the secrets of "creative abundance," was an extraordinary blend of Dale Carnegie's entrepreneurial fervor, Billy Graham's evangelism, and some entertaining wisecracking reminiscent of Morecombe and Wise.

His essential message was: Get other people to build up confidence in you, and then "bill them." If they like you, they'll pay you. This simple message was wrapped in a lot of dubious and often incomprehensible guff about physical planes, abundant forces, infinite sources of energy, vibrancy, destiny, high intention, resonance, clarity, total potential, crescendos of understanding, spiritual growth, and bumping against the roughness of other dimensions. It was exasperating rubbish.

Wilde in effect presented a short course in motivational therapy wrapped up in a confusion of Taoist philosophy and spurious science. Some of his claims are at least testable. He also vigorously promoted the sale of "subliminal" audiotapes, selling for $20 to $25, and a "theta metronome."

The tapes purport to contain messages of affirmation embedded in a musical background. Similar ones have been examined by the National Acoustic Laboratory in several ways, using spectral analysis, filtering, and auto correlation. NAL was unable to find any evidence of messages buried in the "noise," nor is there any evidence that subliminal auditory stimulation can affect behavior in the manner claimed. (For a critical evaluation of such claims, see "Subliminal Perception: A Discussion with Special Relevance to the Use of Subliminal Audio Tapes," by Robert A. Cummins, in the *Bulletin of the Australian Psychological Society,* November 1985, pp. 28-35.)

The placebo effect guarantees that a number of people who read the claims

and listen to the tapes will swear to their efficacy. It would of course be a straightforward matter to set up a simple double-blind test to evaluate their actual effect.

The "theta metronome" is also a cassette tape. It provides gentle repetitive tones recorded at 4–6 cycles per second (theta rhythm) or 7–13 cycles per second (alpha rhythm). The rhythms are said to improve mental abilities, memory, healing, inspirational creativity, relaxation, and "accelerated rest." (For an evaluation of these kinds of claims, see Barry Beyerstein's article "The Myth of Alpha Consciousness," *SI*, Fall 1985.)

There were many more tapes prepared by Wilde and Linn to help the listener develop techniques for making money, nurturing health, increasing power, altering states of consciousness, and to help one become more sensuous and radiant. Creative Abundance, which has been on sale in North America for several years, is seeking to establish an Australian market. It looks set for good business.

—*William Grey*

William Grey has taught philosophy at the Australian National University and Temple University, Philadelphia. He works in the Department of Science in Canberra and is secretary of the Canberra branch of Australian Skeptics.

Searching for Space Aliens . . . In the Tabloid Pages

ONE CHARACTERISTIC of sensationalist tabloid newspapers is both frustrating and puzzling. One might logically deduce that the chief editors of these tabloids never took a course in journalism and certainly never worked for a more traditional newspaper—yet probably such a deduction is wrong.

In more prosaic newspapers, the most important story (at least in the editor's opinion) rates a headline on the front page and the story itself begins on the same page. That is an impossibility, of course, with a sensationalist tabloid whose front page is filled with headlines for many stories. But the article that generates the biggest, boldest headline—seemingly because of its importance—never appears on page 2, or even page 3. Typically, it is buried somewhere deep in the tabloid—contrary to the principles taught in basic journalism courses.

For example, while waiting at the checkout counter of my favorite supermarket recently, my attention was attracted to the banner headline that occupied about one-third of the front page of the September 9, 1986, edition of *Weekly World News*. The headline read: "Respected scientist has DOCUMENTED proof . . . SPACE ALIENS ARE LIVING IN THE U.S."

Hoping against hope, I turned to page 2, where I found an article that began: "In an outrageous miscarriage of justice, four convicts were wined and dined with

WEDDING TURNS INTO BATTLE ROYAL
Weeping bride sees groom & guests hauled off to jail!
WEEKLY WORLD NEWS
55¢
FERGIE IN TEARS!
Princess heartbroken over cruel fat jokes
Respected scientist has DOCUMENTED proof . . .
SPACE ALIENS ARE LIVING IN U.S.
They mean us no harm . . . they are merely here to study us!

an expensive lobster dinner—for starting a prison riot." On the same page was another article that began: "Joan of Arc, Abe Lincoln and even Superman took a backseat when kids were asked about the real heroes in their lives—and they gave the nod to mom and dad."

Page 3 also failed to answer my curiosity about space aliens living among us. It featured a story about a man jailed for unpaid parking tickets and another about a burglary suspect "captured by five gutsy coeds." Page 4 featured a story about a nine-year-old boy who had died of AIDS. The feature story on page 5 began: "Christina Hilding has vowed to remarry the man who fathered her four children and vanished almost 26 years ago."

Finally, on page 7 my search was ended. There was a half-page article on the space aliens. The "respected scientist" quoted in the article was Stanton Friedman, who earned his livelihood for a decade on the college circuit for his hell-fire-and-brimstone talk entitled "Flying Saucers are REAL!" until that business dried up.

The article quoted Friedman as saying: "There is no question visitors from the cosmos mingle with us more than we know." According to Friedman, some of the space aliens "look like earthlings." But others, the article reported, "are gray and tan in color, have no ears, oversized heads and holes for noses." (One might think that anyone whose skin is gray, who has no ears, an oversized head, and a hole for a nose would attract attention, but apparently not.)

The article also quoted Friedman as saying that "they are from outer, outer space—perhaps 222 trillion miles away. . . ." While 222 trillion miles away may seem terribly distant to Friedman, the

closest star to our own solar system, Alpha Centauri, is more than 25 trillion miles away and seems like a close neighbor compared with those that might conceivably have planets with intelligent life.

Friedman went on to explain that the space aliens' "base is a mother ship that is like an aircraft carrier. . . . They are able to speak the language of local people, no matter where they land on earth." (This should be of interest to UFO/Bermuda Triangle writer Charles Berlitz, whose family created the Berlitz Language Centers.)

—Philip J. Klass

Expansion of Local Groups

The growth of local groups is one of the most pleasing aspects of CSICOP. Such organizations undertake investigations at the local level, gain media coverage, hold meetings and social functions, and some publish newsletters. See page 112 for a current listing of local autonomous groups with aims similar to CSICOP's and of CSICOP branches in other countries.

If you live in one of these states or countries and are not involved with the local group and want to become involved, please complete and send the form below directly to the group in your area. If you do *not* live in one of these states or countries and would like to be involved in the formation of a new local organization, please complete the form and send it to Barry Karr/Mark Plummer, CSICOP, Box 229, Buffalo, NY 14215-0229.

Name _____

Address _____

City _____

State/Country _____ Zip/Postal Code _____

Phone: (home) _____ (office) _____

Occupation _____

Interests/Background/Expertise _____

_____

If a local group was formed would you like to be:

☐ Organizer

☐ Group member

☐ Newsletter editor

☐ Consultant: Special area(s) _____

☐ Supporter

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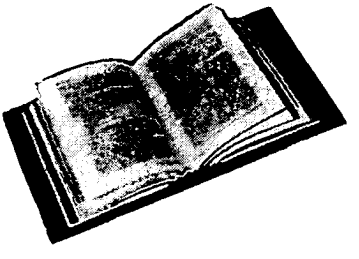

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Reviews

The 'Whole Earth' Review of the Fringe

"The Fringes of Reason: Strange Myths and Eccentric Science." *Whole Earth Review* (P.O. Box 15187, Santa Ana, CA 92705), No. 52, Fall 1986. $4.50.

Kendrick Frazier

VIRTUALLY THE entire Fall 1986 issue of the *Whole Earth Review* is devoted to a lively and informed treatment of the fringes of reason and pop ideas on, and beyond, the edge of science.

Staff editor Ted Schultz, who put this intriguing package of material together, introduces the diverse coverage. Over the past 200 years, he notes, science has succeeded in contradicting many of the mythic teachings of traditional religion, but nothing has replaced religion's role in providing meaning and hope "in what for many is a dreary and mundane world." Thus new mythologies spring up "to fill this visionary void." Countering social standardization and the homogenizing influence of the mass media, "myriad strange beliefs spawn, fission, and multiply. Unusual religions. Space-age folklore. Pseudoscientific theories beyond counting."

"If we can entertain possibilities while withholding belief," says Schultz, "we can safely explore this world of modern mythology for sheer pleasure. The myths can be appreciated as art if not as actual reflections of reality, manifestations of human creativity in spectacular diversity."

Alan M. MacRobert, an editor at *Sky & Telescope* magazine, launches into a lively overview of intellectual self-help, "Reality Shopping: A Consumer's Guide to New Age Hokum." His guidelines should be required reading for

Kendrick Frazier, a science writer, is editor of the SKEPTICAL INQUIRER.

all would-be consumers of New Age thought. Examples: "Watch whether the field of study remains barren over time" (Bates system, iridology, zone therapy). "If someone making paranormal claims compares himself to Einstein, Galileo, or Pasteur, dismiss him right away."

Says MacRobert: "The real significance of the paranormal boom is that so many of us take it so uncritically. It is as if the question 'Is this so?' has become irrelevant—and has been replaced by the attitude, 'If it feels good, it must be right for me.' . . . I think this paradigm has served us poorly."

The most thorough section, and perhaps the one of most interest to SKEPTICAL INQUIRER readers, is the full, skeptical treatment given to the "Hundredth Monkey phenomenon" claim. Schultz says *Whole Earth Review* chose to give the Hundredth Monkey story "a thorough scrutiny" partly because "it is extremely widespread in human potential, New Age, and even nuclear freeze circles" and partly because its popular acceptance is symptomatic "of growing confusion between speculation and proven fact."

The section's coverage begins with a reprint of Ron Amundson's Summer 1985 SKEPTICAL INQUIRER article. Schultz notes that Amundson gives a "definitive answer" to the question "Did the Hundredth Monkey phenomenon really happen?" (As you recall, it did not. Amundson's analysis, I am pleased to report, was given wide publicity and has been well received.) Schultz managed to locate Lyall Watson, originator of the Hundredth Monkey story, and to get a response to Amundson's analysis. Watson writes that he accepts Amundson's analysis "without reservation," but defends the concept as a valid metaphor nonetheless. I will say no more here, because Amundson plans to summarize Watson's response and reply to it in a future issue of the SKEPTICAL INQUIRER.

Humanistic psychologist Maureen O'Hara, who had prepared a strong critique of the Hundredth Monkey phenomenon even before Amundson, follows with a devastating examination (see Letters, *SI,* Winter 1985-86). "The Hundredth Monkey provides us with a case study through which to examine the deterioration in the quality of thought and scholarship among those people who participate in what has become known as the 'New Age' or 'human potential' community," says O'Hara. She fears that this deterioration could discredit humanistic science altogether, if it hasn't already. "My objection to the Hundredth Monkey Phenomenon . . . is not that it is myth, but that it is bad myth, and that it draws its force not from the collective imagination, but by masquerading as science."

Then there's a good article by primatologist Michael Huffman of Kyoto University, where he studies cultural evolution in the same macaque monkeys that are the stars of the Hundredth Monkey story. Huffman gives the real science of the subject. There is nothing mysterious about what happened in the transmission of potato-washing behavior among Japanese monkeys (as Watson led others to believe), he says. Still "much that may prove to be genuinely applicable to human cultural evolution has been learned from the study of Japanese macaques."

Sociologist Ron Westrum chips in with an article on the "Blind Eye of Science." Schultz notes that where the Hundredth Monkey case is an example of a pseudoscientific notion examined by science and found to be false, the reverse can also happen: an anomalistic claim ignored by science can later turn out to be true. Westrum describes the case of stones falling from the sky (meteorites) once ridiculed by scholars in the eighteenth century. He and others love to browbeat what they usually call "the orthodox scientific establishment" for its alleged pig-headedness on this matter (meteoriticists dispute the interpretation). But it does serve to remind us

all—as if scientists need it—of the tentative nature of all scientific knowledge and the need for humility about all current understanding.

John A. Keel provides an interesting personal article on "The Man Who Invented Flying Saucers" (Ray Palmer), and William R. Corliss reports on his fascinating "Sourcebook Project," with its 20 volumes and 7,000 pages of source material on scientific anomalies (mountain-top glows, marine phosphorescence displays, fish falls, etc.) culled mainly from the scientific literature.

Photojournalist Douglas Curran contributes the article "In Advance of the Landing: Folk Concepts of Outer Space," based on his photographic wanderings (and his new book of the same title) among the farthest-out segments of the UFO subculture.

The issue is filled with the kinds of short reviews and excerpts that make the *Whole Earth* publications such fun to read. Publishers' addresses are given for all source materials reviewed.

Schultz introduces the section on access to skeptical books and magazines with a brief history of CSICOP and the SKEPTICAL INQUIRER, "a major vehicle for skeptical writing." Says Schultz: "I find the good skeptical publications at least as much fun to read as the paranormal stuff—usually lots better." Unlike true believers and credulous journalists, skeptics "get to the bottom of the claims through careful examinations of history and facts. I have found more solutions to puzzling anomalies in the few years that I have been reading the skeptics than in the considerable greater number of years I spent reading the mystery mongers."

The *Review*'s review of the SKEPTICAL INQUIRER is gratifyingly positive. "For 10 years, this journal [of CSICOP] has been a lone voice in a sea of irrationality. High-quality articles with plenty of references . . . usually right on target. Anyone who reads from the extensive literature of the paranormal has to read the SKEPTICAL INQUIRER. . . ."

There are capsule reviews of Abell and Singer's *Science and the Paranormal,* Gardner's *Fads and Fallacies . . .* and *Science: Good, Bad and Bogus,* Randi's *Flim-Flam!* and *The Truth About Uri Geller,* and Zusne and Jones's *Anomalistic Psychology,* as well as of *Creation/Evolution* magazine and Prometheus Books ("the best single source for skeptical literature").

Of course the fringe groups, from serious to frivolous, are given their due too. And this makes for a lively compendium. So if you want to know how to reach the International Flat Earth Society, the Stelle Group ("dawn of New Age City"), the Borderland Sciences Research Foundation ("among the granddaddies of weird science"), the Secrets Newsletter, A.R.E. (Edgar Cayce's devoted followers), the Runestone Asatru Free Assembly, Eckankar, Conspiracies Unlimited, Cosmic Awareness, or the Church of the SubGenius (a parody and the subject of a whole article), this is your guide.

It is a fascinating and worthwhile excursion through the fringes of science and New Age thought. Since *Whole Earth Review* reaches a broad audience—a fair number of whom tend to be somewhat attracted to fringe ideas—it is refreshing to have this clear-thinking, good-humored compendium of generally skeptical examinations and source materials presented in such an appealing package. I hope it is widely read and used. •

A Mish-Mash of Lore, Forgotten or Imagined

5/5/2000: Ice: The Ultimate Disaster. By Richard W. Noone. Harmony Books/Crown, New York, 1986. 368 pp. Paper $9.95.

Charles J. Cazeau

ALTHOUGH THE TITLE is very specific and blunt as to the message of Richard Noone's profusely illustrated book, the text wanders like a cowpath. The following outline may be helpful to the potential reader.

5/5/2000: Ice: The Ultimate Disaster proposes that on May 5, in the year 2000, there will be a pole shift along the earth's axis, causing ice masses at the South Pole to move rapidly (in a few hours) to the equator. At the same time, there will be an accompanying slippage of crustal plates, causing widespread vulcanism, earthquakes, and flooding. All this will result in a cataclysm that destroys most of the earth as we know it and many if not most of its inhabitants.

The immediate cause of this incredible scenario will be the buildup of Antarctic ice, causing an imbalance in the earth's rotation due to the weight of the ice in the magnitude of many trillions of tons. Contributing causes include (*a*) a nova explosion (Vela X), (*b*) changes in albedo, causing earth-cooling and ice-sheet growth, and (*c*) sunspot increases deviating from the 11-year cycle. If that isn't enough, a major planetary alignment in the solar system will take place at this time (a Jupiter Effect).

What is the basis for this belief? Ancient wise men 6,000 years ago saw this event coming; they wanted to warn those of us who would be 6,000 years distant. These wise men would be the ancient Egyptians, but since they came under the influence of the Hyksos it was the latter who decided to build the Great Pyramid of Giza 6,000 years ago, embodying future events in the angles, lengths, and other measurements of the pyramid. There is more. The pyramid, Noone says, was remarkable in that it could serve to produce an induction field such that an individual in the so-called King's Chamber could see into the future. The Great Pyramid is a time machine. It is now damaged in that respect. An offshoot of the Hyksos known as the Freemasons carried on this knowledge to recent times in their secret rituals and mysteries.

As evidence for the book's thesis and for these beliefs, author Noone claims there have been other pole shifts causing cataclysms in the past, especially in 6,000-year cycles. This, he says, is demonstrated by the research of Immanuel Velikovsky. He further claims that ice is growing in Antarctica today; the Piri Re'is map proves Antarctica was ice-free 6,000 years ago; volcanic eruptions and earthquakes are increasing; and the sinking of Atlantis and Mu (in the Pacific) are good examples of cataclysms in the past.

The tenets of this book are without a shred of scientific foundation. It is riddled with factual error and suffused with unwarranted speculation. At the outset, the author claims to be a skeptic, and then proceeds to accept uncritically any data that support his hypothesis. I do not mean to be unkind, but Mr. Noone is gullible, either

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Charles Cazeau recently retired as professor of geology at the State University of New York at Buffalo. He is co-author of Exploring the Unknown: Great Mysteries Re-examined *and of the textbook* Physical Geology. *His most recent book is* Science Trivia *(Plenum).*

---

unaware or deliberately ignoring the findings of science that relate to his own research. He thus follows in the footsteps and tradition of such discredited and equally gullible authors as Velikovsky, von Däniken, Barry Fell, and Charles Berlitz. Indeed, these authors form a rich source of support for Noone's ideas.

The author's major assumptions can be refuted easily without recourse to anything other than common sense. To wit:

1. He says the mass of ice at the South Pole will trigger a shift of the rotational axis. Yet this ice is the merest coating of frost on a mightier globe of denser rock 4,000 miles in radius, compared to a one-and-a-half-mile-thick sheet of less dense ice.

2. The Jupiter Effect of planetary alignment will aid in shifting the poles, he claims. This planetary distribution (not alignment) already occurred as recently as 1982. What happened? Nothing—despite the dire predictions of other writers.

3. He says that Antarctica was free of ice 6,000 years ago, but in all likelihood that ice sheet has been there for 20 million years. If it had all melted 6,000 years ago, it would have raised worldwide sea level more than 100 feet. There is no geological evidence to support this claim. Noone's basis, the Piri Re'is map, is a poor map of earth's geography, but for the time it was circulated, in 1513, not bad.

4. If a large ice mass can trigger a polar shift, why didn't that happen during the Pleistocene 18,000 years ago, when one-third of the earth in the Northern Hemisphere was covered by thick ice-sheets and sea level dropped more than 300 feet?

5. Noone claims that volcanoes and earthquakes are on the increase. No they aren't. Efficiency in reporting them is, and they have recently struck inhabited rather than remote areas.

Within the historical and archaeological realm, author Noone is completely lost. The Great Pyramid was not built 6,000 years ago. It was built in the Fourth Dynasty, about 4,500 years ago. It was not the first pyramid built, the other major pyramids being copies, but it was built after the Step Pyramid of the Third Dynasty. These facts can be read from the hieroglyphics of those times. In addition, the Hyksos did

not kindly come into Egypt 6,000 years ago and benevolently take over; they came in the Seventeenth Dynasty, plundering, murdering, leveling temples and cities, and enslaving the Egyptian people. Where does Noone get his ideas? There was no society of Freemasons 6,000 years ago that I know of, and my family is loaded with them. They started in about the twelfth century as a kind of union.

In summary, I would like to say that Mr. Noone's book is interesting and well-written, with several informative tracts, such as that on the ruination of the Knight's Templars in France by King Philip. Yet the reader should be mindful that in the opinion of this reviewer this tome is fictional—but the scientific attitude is to let readers judge for themselves. •

Some Recent Books

Listing here does not preclude a more detailed review in a future issue.

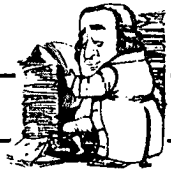
Booth, John. *Psychic Paradoxes.* Prometheus Books, Buffalo, N.Y., 1986. 241 pp., $13.95, paper. Combines explanation of original psychic conjuring tricks, biographies, and secrets of noted theatrical mentalists with author's own ghost-hunting experiences and conclusions. Examines the broad spectrum of devotees of psychic phenomena, from entertainers through spirit mediums to serious scientific investigators. Reprint of 1984 hardcover. (See brief review, *SI,* Summer 1985, p. 376.) 1985, p. 376.)

Cazeau, Charles J. *Science Trivia.* Plenum Press, New York, 1986. 285 pp. $17.95. A lively and entertaining guide in question-and-answer format to typical questions people have about science and nature. A fun way to learn, and also a good guide to distinguishing science from pseudoscience; the final third of the book gives good-humored and scientifically responsible answers to questions about the supernatural: witches, demons, ghosts, monsters, UFOs, superstition, powers of the mind, and so on.

Moore, K. D. *A Field Guide to Inductive Arguments.* Kendall/Hunt Publishing Co., 2460 Kerper Blvd., Dubuque, Iowa 52001, 1986. 161 pp. $19.95. A welcome manual for identifying and evaluating inductive arguments encountered in everyday life. Devoted to the idea that a student who studies patterns of argumentation will be able to reason more reliably and be a better judge of arguments of others. Exercises include many examples that lead student to see flaws in arguments made on behalf of astrology, psychic surgery, UFO reports, etc.

Wolman, Benjamin B., ed. *Handbook of Parapsychology.* McFarland & Co., Inc., Box 11, Jefferson, NC 28640, 1986 reprint. 991 pp. $49.95. This volume, originally published in 1977, is a comprehensive reference on parapsychology.

Articles of Note



Aveni, Anthony F. "The Nazca Lines: Patterns in the Desert." *Archaeology,* July/August 1986, pp. 33-39. Good article by respected archaeoastronomer on the "spectacular," "over-dramatized" lines on the Nazca plain. Recommended for the science in it alone. As for the myths about Nazca: "Whatever the final answer may be to the mystery of the Nazca lines, this much is certain: the pampa is not a confused and meaningless maze of lines, and it was no more intended to be viewed from the air than an Iowa wheat field."

Buchanan, Sherry. "If All Else Fails, Managers Are Turning to the Stars." *International Herald Tribune,* May 7, 1986. Paris-datelined article on companies using astrology to help solve internal and external communication problems. A company's chart costs $700 a day. The engineer-businessman who prepares them says having an astrological chart humanizes the company for employees. "Astrology is the great communicator."

Charig, Alan J., et al. "*Archaeopteryx* Is Not a Forgery." *Science,* 232:622-626 (May 2, 1986). Report by British Museum scientists rebutting the contention by Fred Hoyle and N. C. Wickrasinghe that this famous and significant fossil is a forgery. The authors show persuasive proof of authenticity. See also Gould (below) and letter by British Museum paleontologist Peter J. Whybrow about this controversy in *New Scientist,* September 4, 1986, p. 62.

Curran, Douglas. "A Chronicler of Flying Saucer Folklore Says UFO's Are Symbols of Deep Belief, Not Mere Whimsy." *People,* September 8, 1986, pp. 45-47. Interview with Curran, a Canadian photographer who has published a book based on a seven-year, 250,000-mile odyssey around North America visiting UFO believers for whom belief has become faith.

Dale, John, and Richard Holliday. "Doubting Doris: Does Psychic Star Conjure Up Facts as Spirits Move Her?" *The Mail on Sunday* (London), April 20, 1986, pp. 32-33. A special investigation into the claims of Britain's most popular medium, Doris Stokes. Examines six case studies, finds her stories don't match the facts. Even her story about her son's death was wrong. The next issue, April 27, contains a followup story and letters to the editor.

Donnelly, F. K. "Catalogue Wars and Classification Controversies." *Canadian Library Journal,* 43, no. 4, August 1986, pp. 245-247. Examines several controversial cataloguing problems, including the classification of anti-Semitic works and books proven to be forgeries or hoaxes.

"The Evidence Against Reincarnation." *Free Inquiry,* 6, no. 4, Fall 1986. Two articles: Melvin Harris, "Are 'Past-Life' Regressions Evidence of Reincarnation?" and Paul Edwards, "The Case Against Reincarnation: Part I."

Godfrey, Laurie R., and John R. Cole. "Blunder in Their Footsteps." *Natural History,* August 1986, pp. 5-12. Good critical examination by anthropologists of the Paluxy "mantracks" in Texas claimed by creationists to show dinosaurs and humans were contemporaneous. This gives further details of the investigation earlier reported in *SI* (Spring 1983, p. 3) and in *Creation/Evolution,* 6, no. 1.

Gould, Stephen Jay. "The Archaeopteryx Flap." *Natural History,* September 1986, pp. 16-25. A typically revealing but untypically angry report by Gould on "the

Inquiries into Faith-Healing

Recent issues of *Free Inquiry* (Box 5, Buffalo, NY 14215) have been filled with reports on faith-healing. They are the best single place for full details of the investigations led by James Randi, and followups to them. Partial contents:

Spring 1986, Vol. 6, no. 2 (special issue) — "Faith-Healing: Miracle or Fraud?" The Need for Investigation, *Paul Kurtz;* Be Healed in the Name of God!" *James Randi;* A Medical Anthropologist's View of American Shamans, *Philip Singer;* On the Relative Sincerity of Faith-Healers, *Joseph Barnhart:* Does Faith-Healing Work? *Paul Kurtz.* God Helps Those Who Help Themselves, *Thomas Flynn.*

Summer 1986, Vol. 6, no. 3 — The Shocking Truth About Faith-Healing: Deceit in the Name of God: What Can Be Done? *Paul Kurtz;* Peter Popoff Reaches Heaven Via 39.17 Megahertz, *James Randi;* Peter Popoff: Miracle Worker or Scam Artist? *Steven Schafersman;* Behind the Scenes with Peter Popoff, *Robert Steiner;* W. V. Grant's Faith-Healing Act Revisited, *Paul Kurtz.* Further Reflections on Ernest Angley, *William McMahon, James Griffis.* Salvation for Sale: An Insider's View of Pat Robertson's Organization, *Gerard Straub.*

Fall 1986, Vol. 6, no. 4—CSER's Investigation, *Gerald Larue;* An Answer to Peter Popoff, *James Randi;* Popoff's TV Empire Declines, *David Alexander;* Richard Roberts's Healing Crusade, *Henry Gordon.*

truly rotten core in [Sir Fred] Hoyle's argument" (that this famous transition fossil is a forgery). Gives results of Charig et al.'s decisive defense (see above) and provides much further historical background and analysis. "I can forgive Fred Hoyle for his error about the slab and cement; we all make a whopper of a mistake once in a while. . . . But I cannot smile so benignly upon his misuse of history." Had Hoyle "spent but an hour or two actually reading what [Richard] Owen [who formally described the specimen in 1863] wrote about *Archaeopteryx,* rather than ripping off the cardboard history for his own purposes, we would have been spared this wasteful and hurtful incident in folly." Hoyle's claim, says Gould, was "a vacuous hypothesis, carelessly and irresponsibly made from the first."

Hentschel, Uwe, and M. Kiessling. "Season of Birth and Personality: Another Instance of Noncorrespondence." *Journal of Social Psychology,* 125(5):577-585 (1985). Study examines claims of a relation between season of birth and personality variables. It finds none.

Hodson, Derek, and Bob Prophet. "A Bumpy Start to Science Education." *New Scientist,* August 14, 1986, pp. 25-28. Discusses the Victorian preoccupation with phrenology and its use at the time to inspire an interest in science. Authors show that its use tended to reinforce then-accepted social differences.

Morris, Robert L., and Ian Stevenson. "Investigating the Paranormal" (Correspondence). *Nature* 322:680 (August 21, 1986). Two parapsychologists respond, in separate letters, to David Marks's earlier *Nature* article critical of their field (see *SI*, Summer 1986).

Rotton, James, and Ivan W. Kelly. "The Lunacy of It All: Lunar Phases and Human Behavior." *Mercury* (Astronomical Society of the Pacific), May-June 1986, pp. 73 ff. A progress report on the lunar-phase controversy. Summarizes much of the material in the authors' article in *SI* (Winter 1985-86).

Skrabanek, Petr. "Demarcation of the Absurd." *Lancet*, April 26, 1986, pp. 960-961. Essay argues that medicine is defenseless against claims of irrational healing methods and quackery because it "lacks criteria for the demarcation of the absurd."

Van Hattem, Margaret. "A Cost-Effective Count of the Spoons." *Financial Times* (London), January 18, 1986. Report on Uri Geller's psychic-mining business and finances. See News & Comment, this issue.

—*Kendrick Frazier*

Follow-up

The Literature of Fringe Science

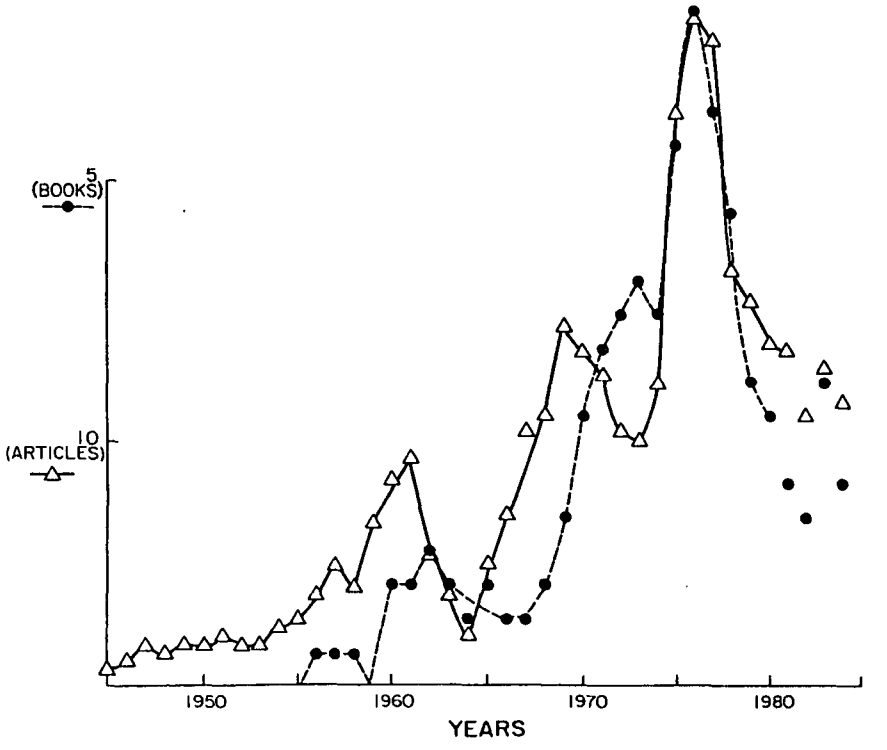
AS STEVEN Dutch remarked (*SI*, Summer 1986, pp. 342–351), fringe science seems to come in waves, but we sorely lack data on the frequency, magnitude, and specificity of those waves and so don't really understand why they occur. I want to add some data to those published by Dutch and to comment on their interpretation.

For a number of years I have been collecting references to material about the Loch Ness monster; my list now includes nearly 400 articles in periodicals, 70 books (including revised or reissued editions and monographs and pamphlets), and many newspaper clippings and miscellaneous items. The chronology of appearance of those articles and books, shown in the accompanying figure, correlates well with the trends found by Dutch; in particular, there is a notable surge of publication in the mid-1970s and a definite decline into the 1980s. Now Dutch accumulated his accounts by what is essentially a sampling procedure (and he drew attention to some of the uncertainties involved), whereas my collection is very nearly complete;[1] that our data show similar trends gives one added confidence in the validity of Dutch's sample.

Such data are of interest in several directions:

1. Societal factors that might correlate with increased and decreased interest in fringe science. Historians, philosophers, and sociologists of science in particular know how difficult it is to untangle external factors of that sort from internal ones (that is, factors specific to the particular topic or phenomenon). To that end, more data are sorely needed about fringe science; one hopes that Dutch's work will be extended, particularly into the past. For the present and future, more detailed studies could well benefit from the increasing availability of such specific bibliographies as: Thomas C. Clarie, *Occult Bibliography—An Accumulated List of Books Published in English, 1971–75,* Scarecrow Press, Metuchen, N.J., 1978; *Occult Paranormal Bibliography—An Annotated List of Books Published in English, 1976–81,* Scarecrow Press, 1984; George M. Eberhart, *Monsters: A Bibliography of Humanoids, Water Monsters, and Other Unknown Animals,* Garland Press, New York, 1983.

2. Even in absence of any understanding of external factors, Dutch's data provide an important control for discussion of public interest in specific fringe fields. That all these topics were so prominent during the 1970s, for instance, indicates that purely internal or topic-specific explanations are unlikely to be valid for the increase



Numbers of articles and books on the Loch Ness monster, 1945-1985.

in published material about any individual fringe subject during those years: One would seek internal explanations only when public interest in a specific topic shows a trend different from that for these subjects as a whole.

Take Loch Ness, for example. The publishing peak about 1976 correlates with that found by Dutch for occult material (1975–76), for Atlantis, etc. (1978–79), and for UFOs (1978). Therefore, one would look to general societal factors for an explanation, not to events specifically at Loch Ness; but, lacking Dutch's data, I was tempted to ascribe the increased writing about Loch Ness in those years to the underwater photographs obtained in 1972 and 1975,[2] much publicized during that year and leading to the sponsorship of the search by the *New York Times* in 1976.

The peak for Loch Ness seems to show a subsidiary peak between 1969 (articles) and 1973 (books); that the Atlantis and also the UFO literatures seem to have similar peaks again points to the need for a general rather than a specific explanation. On the other hand, occult literature was not lacking before the 1950s, whereas Loch Ness and UFO material was, and so more specific explanations are called for; with UFOs, of course, that would be the first set of sightings reported in modern times; with Loch Ness, it would probably be the revival of interest owing to the writings of Constance Whyte and the founding of the Loch Ness Investigation around 1960.

Westrum's studies of the availability of information about anomalous matters are highly relevant here: Westrum found the receptivity of the media to be as important as, or even more important than, the occurrence of the phenomena in leading to published reports.[3] Thus the rarity of published reports of child abuse before the

1960s reflects society's disbelief and lack of receptivity to such stories, not an absence of the phenomenon.

As to the nature of the external factors that stimulate interest in fringe science, Dutch (among others) has suggested times of hardship that make escapism attractive and a desire to attack scientific authority; in other words, Dutch sees fringe science as standing chiefly in opposition to science. Now the *content* of fringe science is certainly—by definition—in opposition to the content of contemporaneous science; but it may be that science proper and fringe science are parallel or similar rather than antagonistic *in their psychosocial function,* that is, in what people want from them.

I make that suggestion because of indications that fringe science is particularly prominent at times when important things are happening in science proper. During the nineteenth century, quackery mushroomed around electrical and magnetic effects at the same time as modern scientific understanding of electromagnetism was being forged. At the end of the nineteenth century and the beginning of the twentieth, Ignatius Donnelly published *Ragnarok,* to which Velikovsky's *Worlds in Collision* (1950) was extraordinarily similar;[4] Wilhelm Fliess made the suggestions taken up again in the 1970s by the biorhythm faddists; the British Society for Psychical Research found respectable scientists immersed in the study of psychic phenomena, as again in the past few decades we have "paraphysicists" and others—and the turn of the century was a time of revolutionary advances in science (quantum effects, relativity, radioactivity) just as the past few decades have been.

Of course much more information is needed on these matters; and I would be extremely grateful to learn of anything that may have been written about the occurrence of fringe science in times past and about the relation between science proper and fringe science. My interpretation would suggest that the most productive stance to take toward fringe science might be one of some sympathy and tolerance: The followers (if not the leaders) might need to be educated, but their hearts are in the right place. They may seem antagonistic toward science, but it is through misunderstanding and frustration, not through mindful rebelliousness. If that is the case, then sarcastic debunking would be counterproductive and even uncalled for. On the other hand, of course, if fringe science were a conscious and informed rejection of, and an attack on, science, then a marshaling of all available weapons to the battle might be less inappropriate.

Henry H. Bauer
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Notes

1. I have had the assistance of many people, including most of the prominent investigators at and of Loch Ness. The collection is documented in a computer file, a description of which I shall be pleased to send to interested individuals. The bibliographic details of the books, chapters, and articles, and of some of the newspaper items and miscellaneous material, are given in an appendix to my book, *The Enigma of Loch Ness: Making Sense of a Mystery,* University of Illinois Press, Urbana and Chicago, September 1986. An analysis of these writings about Loch Ness (based on a smaller collection and up to 1980) has been published (Henry H. Bauer, "The Loch Ness Monster: Public Perception and the Evidence," *Cryptozoology,* 1 (1982): 40–45); a fuller and updated discussion has been accepted for publication in

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the *Journal of Scientific Exploration* (Society for Scientific Exploration, c/o Professor Frederick, Department of Astronomy, University of Virginia, Charlottesville).

2. See articles in *Cryptozoology* and *Journal of Scientific Exploration*, Note 1.

3. Ron Westrum, "Social Intelligence about Anomalies: The Case of UFOs," *Social Studies of Science*, 8 (1978): 461-493; "Knowledge about Sea-Serpents," *Sociological Review Monograph* No. 27 (ed., Roy Wallis), March 1979, 293-314; "Social Intelligence about Hidden Events," *Knowledge: Creation, Diffusion, Utilization*, 3 (1982): 381-400.

4. Henry H. Bauer, *Beyond Velikovsky: The History of a Public Controversy*, University of Illinois Press, Urbana and Chicago, 1984. •

Martin Gardner and Daniel Home

MARTIN GARDNER expresses astonishment that I should challenge his interpretation of Home's self-levitations ("Follow-Up," *SI*, Summer 1986). Why else, he asks, should a medium choose to perform in darkness except that it makes it so much easier to cheat? If you will bear with me once more I would like to respond.

I have no doubt that, in the overwhelming majority of cases, Gardner's commonsense explanation is the correct one. There are, however, good reasons for doubting whether this was so in the case of Home. We must remember that Home produced some of his most powerful and impressive phenomena, e.g., his table levitations, in full illumination. There are a great many circumstantial accounts of these from a variety of witnesses, and the fact is that no one, to this day, has ever offered a plausible natural explanation for them. Given the size of the tables, the heights to which they were elevated and the conditions obtaining, the idea that Home might have been using some sort of concealed machinery is so ludicrous as not to be worth discussing. Yet the only alternative, as far as I can see, is to suppose that the tables never left the ground but that all the sitters when in the presence of Home dutifully hallucinated their rising. But this would be to ascribe to Home a power that was hardly less miraculous than the one in question and even more exceptional. Of course it could be that, having given a display of genuine table-levitation, Home turned down the lights and proceeded to give a display of fraudulent self-levitations, but I cannot imagine that Martin Gardner would find this plausible. It seems to me more likely, therefore, that the self-levitations, although performed in semi-darkness, were also genuine.

I agree that, if Home possessed genuine paranormal powers, it is curious that he should have resorted to the cloak of darkness. In fact, somewhat belatedly, he himself realized that he had made a tactical error. In his book *Lights and Shadows of Spiritualism* (1877), written toward the end of his life, he expresses regret that he had ever given séances in anything less than full light. "Light," he insisted, "is the single test necessary and it is a test which can and must be given." At the same time he pointed out that "every form of phenomena ever occurring through me at the few dark séances has been repeated over and over again in the light." Nor was this an

empty boast. William Crookes, speaking at the Society for Psychical Research, some ten years after Home's death, had the following to say:

> Home always refused to sit in the dark. He said that with firmness and perseverance the phenomena could be got just as well in the light and, even if some of the things were not so strong, the evidence of one's eyesight was worth making some sacrifice for. In almost all the séances I had with Home there was plenty of light to see all that occurred and not only to enable me to write down notes but to read my notes without difficulty.[1]

So much for Gardner's insinuation that Crookes was really just fooling around in the dark. Crookes also remarks on this occasion:

> During the whole of my knowledge of D. D. Home, extending over several years, I never once saw the slightest occurrence that would make me suspicious that he was trying to play tricks. He was scrupulously sensitive on this point and never felt hurt at anyone taking precautions against deception.

Evidently Martin Gardner is unimpressed by Crookes, whom he calls "gullible" and "unreliable." Indeed, he seems to prefer the opinion of the lampoonist from *Punch* who, we may be sure, never attended a sitting with Home, or even that of Robert Browning (who found no fault with his sitting at the time but later developed a pathological hatred toward Home), to that of Crookes, who had had numerous sittings with Home. I do not grudge Gardner his prerogative in seeking to discredit a witness whose testimony conflicts so sharply with his own suppositions; but, when that witness happens to be someone who, in due course, attained, successively, a knighthood, an Order of Merit, and the presidency of the Royal Society, Gardner must not be surprised if he is suspected of special pleading.

Be that as it may, it was certainly not Crookes's fault that his fellow scientists could not be persuaded to pay attention to Home's phenomena. To quote once more from Crookes's reminiscences:

> I think it is a cruel thing that a man like D. D. Home, gifted with such extraordinary powers, and always willing, nay anxious to place himself at the disposal of men of science for investigation, should have lived so many years in London, and with one or two exceptions no one in the scientific world should have thought it worth while to look into the truth or falsity of things which were being talked about in society on all sides.

One of these few honorable exceptions among his contemporaries was Francis Galton. Galton took no special interest in psychical research, but he was conscientious enough to attend a sitting with Home at which Crookes was officiating. It is clear, from a letter he wrote afterward to his cousin Charles Darwin, that he did not share Gardner's low opinion of Crookes. "Crookes, I am sure, so far as it is just for me to give an opinion, is thoroughly scientific in his procedure. I am convinced the affair is no matter of vulgar legerdemain. . . ."[2] Galton, indeed, reserved his criticism for his fellow skeptical scientists: "I really believe the truth of what they [the mediums] allege, that people who come as men of science are usually so disagreeable, opinionated and obstructive and have so little patience that the séances rarely succeed with them."[3]

So much then for Home. But Martin Gardner raises the more general question, of interest in its own right, of why for so long it was thought necessary to resort to

darkness or dim illumination when investigating psychical mediumship, especially if materializations were involved. Broadly speaking there were two basic hypotheses, which we might call the physical and the psychological. According to the physical hypothesis the action of light was antagonistic to the phenomena. Crookes himself seems to have accepted this view, almost universal at the time among both spiritualists and their investigators. Although, as we have seen, he did not consider darkness essential, he accepted "as a well ascertained fact that, when the force is weak, a bright light exerts an interfering action on some of the phenomena."[4] Home, it was thought, could afford to operate in the light only because he was so much more powerful than other mediums. However, in answer to Gardner's query about what would have happened if someone had turned up the gaslight while Home was aloft, the effect, I presume, on this hypothesis, is that he would have come crashing down—like Icarus!

The more modern view would be to adopt a psychological hypothesis, and this could take various forms. For example, most people, as we know, find it easier to fall asleep and stay asleep in a darkened room, although it is quite possible to sleep in daylight. If entering a deep trance was necessary for most mediums before producing physical phenomena, then it is understandable why darkness was at a premium. Modern parapsychologists stress the importance of a psi-conducive atmosphere in experiments, and here again darkness might be a positive psychological factor. According to Batcheldor, some degree of ambiguity in the situation is essential if we are to avoid inhibiting the phenomena; in other words, it helps if we can reassure ourselves that the phenomena might not be paranormal after all.

But these are all speculations that I put forward with due diffidence only because Gardner challenged me to lay my cards on the table. I can, unfortunately, see no prospect at present of deciding between these rival hypotheses. The trouble is that physical mediums (or, at any rate, ones who are amenable to testing) are an extinct species. All I can say to Martin Gardner, with any degree of assurance, is that the enigma of Daniel Home remains unsolved.

John Beloff
Department of Psychology
University of Edinburgh
Edinburgh, Scotland

Notes

1. *Journal of the SPR,* 6 (1893–94): 341-345; reprinted in R. G. Medhurst, ed., *Crookes and the Spirit World,* Souvenir Press, London 1972.
2. The letter is dated 19 April 1872 and has been published in Karl Pearson, *Life, Letters and Labours of Francis Galton,* 3 vols., Cambridge University Press, 1914-1930; also in R. G. Medhurst and K. M. Goldney, "William Crookes and the Psychical Phenomena of Mediumship," *Proceedings of the SPR,* 54 (1964): 42.
3. See Note 2.
4. See Note 1.

From Our Readers

The letters column is a forum for views on matters raised in previous issues. Letters are more likely to be published if they are brief and typed double-spaced. They may be edited for space and clarity.

Occam's Razor

I agree with Elie Shneour's results in his article on Occam's Razor (*SI*, Summer 1986), but disagree with the method he uses to arrive at them. If we take the meaning of Occam's Razor to be "the simplest explanation for an observation is most likely to be the correct one," what is the observation that he is trying to explain? Is he trying to explain the biblical account of the Flood? Where is there an observation of a flood or an ark? The only thing we observe is a *story* about a flood and ark in the Bible. Applying Occam's Razor to that story, the simplest explanation is that human beings, in writing the Bible, used their imaginations to elaborate on certain myths that had been handed down from before the time of writing.

Actually, what Dr. Shneour has done is to apply the method of *reductio ad absurdum* to the account of the Flood. He considers the story as a hypothesis, applies deductive logic, deduces what must have taken place considering the number of animal species we now recognize, and shows that the result is absurd. With this kind of logic there is no argument.

What bothers me is holding up Occam's Razor as a "verity"—a statement assumed to be a permanent truth. It is certainly true that "things must not be multiplied beyond necessity." But when we translate this statement into "the simplest explanation for an observation is most likely to be the correct one," then I pause. In the first place, if the simplest explanation is *most likely* to be correct, then it is not *always* correct. Then how do we know when it *is* correct? A law with exceptions is of no use unless we have a rule defining the exceptions.

As a matter of fact, there is no reason to believe that the simplest explanation for anything is the correct one. There is no scientific or logical basis for this belief. It is simply a convenient prejudice. Counterexamples abound. Consider John Dalton's belief that all elemental gases are composed of molecules, each with a single atom. This was the simplest theory that explained the observations of the day. Dalton's belief led him to conclude that the atomic weight of oxygen was 8 (instead of 16), leading to a confusion among chemists that lasted from 1803 to 1860.

In modern physics, relativity and quantum theory explain the observations better than Newtonian mechanics and are much more complicated than Newtonian mechanics. But the essential point is that the observations get explained. The simplicity or complexity of the theory has no bearing on its acceptance.

Milton Rothman
Philadelphia, Pa.

I read Elie Shneour's article with great interest. May I add in the spirit of Occam's Razor that careful reading of many biblical texts is all that is necessary

to apply the razor to many creationists' claims. Although I appreciated all the data Shneour provided, he did not have to go to all that work.

If one reads the Genesis account of the Flood carefully one can see that it is really two separate accounts loosely tied together by some editor(s). For instance, one of the accounts tells us that God required Noah to transport pairs of all animals, but later we suddenly hear that God wants seven pairs of all clean animals and pairs of animals that are unclean—as if the ark were not crowded enough! Even though it is less clear, the duration of the Flood is in great dispute. One account tells us that the Flood lasted 150 days, while in the other account it lasted about half that time. So, how long did this catastrophic world flood last?

Obviously I could continue these examples for a very long time, but the examples do not prove or disprove the story. I believe it is important to understand that faith is not dependent upon scientific "proof" in the data; rather, faith is a response to God's perceived action in the world. When the creationists or anyone attempt to account "scientifically" for biblical statements of faith, it is neither good science nor good religion. And that is the time we need to sharpen Occam's Razor.

Kevin B. Buchanan
Oregon, Mo.

Elie Shneour, in "Occam's Razor," uses as his example a literal interpretation of the Flood and Noah's ark. It should be noted that creationists have devised many ingenious—though totally ad hoc—hypotheses to get around some of the obvious difficulties he presents. It is important to acknowledge these; otherwise, Shneour leaves himself open to the charge of misrepresenting current creation-science arguments and attacking a straw man.

Most practitioners of creation-science deny that all living species had to be represented on the ark. Noah took two of each originally created Genesis "kind" aboard (seven of the clean). Therefore calculations of the number of existing species becomes (according to this argument) irrelevant. Further, many "kinds"—marine animals and larval insects, for instance—need not have been sheltered aboard the ark to survive the Flood. A popular current estimate of the number of animals taken on board is 35,000. Plant seeds could have survived the Flood in a variety of ways. Babies rather than adults of the larger "kinds" were taken, it is surmised, to avoid crowding. And perhaps most animals were able to hibernate for the duration, eliminating most of the food storage (and much of the elimination) problem.

The "world that perished," the antediluvian earth, was a much different place from what we now inhabit. There were no high mountains, so the objection to the volume of water necessary to submerge present-day Ararat—not to mention Everest—disappears. (I believe this was pointed out in a response to Jukes's original article.) Also, the Flood waters were not supplied by our everyday sort of rain, but by the collapse of the pre-Flood canopy: the "waters above the firmament." This consisted of water in either vapor, liquid, or ice form, and contained the equivalent of 40 feet of water. But the bulk of the water came from the "fountains of the deep." There were no deep oceans in the antediluvian earth, only springs and streams, and perhaps shallow seas. The deep ocean basins formed as a result of the Flood and now accommodate the waters that totally submerged the antediluvian plains and low hills.

Of course there is no independent evidence for any of these purely ad hoc speculations. They are devised solely to preserve the Flood interpretation. (And supernatural explanations are openly relied upon to get around the unavoidable difficulties in Flood geology and with the ark, in addition to Creation itself.) Thus Shneour's main point—science's preference for the more parsimonious explanation—still applies powerfully to this case. But we should be careful that what we are attacking is what the crea-

tionists are actually now asserting, lest we lose credibility with some of our audience on technicalities.

Tom McIver
Los Angeles, Calif.

The writer is the author of "Ancient Tales and Space-Age Myths of Creationist Evangelism" in our Spring 1986 issue.—ED.

As an orthodox Christian, I am frequently embarrassed by theologians who make statements about science that are naive and absolute. But I am equally embarrassed by scientists who make naive, absolute statements about religion like those of Elie A. Shneour in his "Occam's Razor." I have no quarrel with the body of his article, in which he applies Occam's Razor to the Genesis account of the Flood. My discomfort is with the first paragraphs, where, with a literary wave of the hand, he dismisses philosophical questions of the greatest depth as though they came from last week's *National Enquirer.*

Mr. Shneour asserts that "most religions require uncritical beliefs, resignation to earthly fate in silence, and above all that no questions be asked." I am surprised that Mr. Shneour has had the time to examine the foundations of all the world's religions, in their depth and complexity. I suspect that his barbs are really directed at fundamentalist Christianity. But Christianity, taken as a whole, does not fit his description. The continuing history of reformation and renewal is evidence of a long tradition of *critical* belief in Christianity. The central place of social justice in both Jewish and Christian sacred literature is antithetical to "resignation." And the first steps of scientific discovery were made in the Western (Christian) world, under the influence of a tradition that proclaimed that God and His creation could be known and were worth investigating.

Andrew B. Crouch
Ithaca, N.Y.

"Occam's Razor" presented a useful tool for discussing issues with people who are already capable of and committed to scientific thinking. However, it avoids a serious problem: all of those *other* people. That omission may be due to a common misconception: that humans are "constructed" to think logically and effectively, but that many of us just haven't perfected that ability quite yet.

On the contrary, the experiences, including education, that "construct" most people do *not* seem to foster such thinking. In particular, a high percentage of humans, including some scientists, accept *words* as a source of knowledge, often in the form of a revelation from a god and subsequent pronouncements by deputies. Both differing revelations and contradictions within one revelation are ignored; indifference or faith enables most to rise above such imcompatibilities when they are pointed out.

William G. Keehn
Mountain View, Calif.

I enjoyed very much the articles on repeatability and Occam's Razor in your Summer issue. Someone is finally tackling parapsychology's logic as well as its facts. Let me suggest another fallacy to tackle. While it is more obscure than those in your articles, it seems to me parapsychology's old standby.

The fallacy in question is *argumentum ad ignorantiam.* Here denying one fact proves another. For instance, believers in telepathy argue this way: Chance does not explain a card reading; the odds are one million to one a subject can read so many of another's cards. Fraud by staff does not explain it; the parapsychology staff has a reputation for honesty. In fact, believers in telepathy deny all rational explanations for the reading. But denying the rational cannot prove telepathy. That falls into the fallacy of *argumentum ad ignorantiam.* In the end, perhaps nobody knows the reading's explanation. Yet nobody knows many things: how to cure cancer, how to surpass the speed of light. And few invoke psychic explanations for

them. Why should this ignorance warrant such explanations?

Richard A. Dengrove
Alexandria, Va.

Elie A. Shneour replies:

The letters in response to my article testify to the high quality of readership of the SKEPTICAL INQUIRER. *Although space limitations preclude response* in extenso, *the following brief comments are offered in rebuttal.*

Rothman is correct in that I applied the method of reductio ad absurdum *to the account of the Flood, but I logically got there by the application of Occam's Razor. These two are not mutually exclusive. I do not, however, hold Occam's Razor to be a verity and therefore a permanent truth. By its very definition, Occam's Razor can only be a logical guideline, a starting point: There can never be permanent truths in science, only models.*

Buchanan and McIver are quite right in their analysis of the ambiguities in the account of the Flood, but no matter how the biblical text is interpreted the results remain essentially those of my article, "within experimental error." And who said that such analysis is either good science or good religion? Obviously it is neither, and that is exactly the point of the article!

Keehn's letter makes a thoughtful and important point that deserves more than appeared in "Occam's Razor." I would only suggest here that semantics plays a crucial and rarely recognized role in human affairs. S. I. Hayakawa's classic Language in Thought and Action *makes an eloquent and documented case for Keehn's point.*

Crouch's letter suggests that I, being a scientist, am necessarily naive about religion. Crouch is mistaken, but this is not the forum to develop this argument, except to add that this writer doubts that Crouch himself "had the time to examine the foundations of all *[emphasis added] the world's religions in their depth and complexity." Fundamentalism is now rampant throughout the world, and apparently growing at the expense of reasoned, established systems of beliefs. Even the Roman Catholic church has now proscribed the relatively mild dissent of theologian Charles Curran. And this writer, personally influenced in his youth by Teilhard de Chardin, has experienced those limitations in the thinking elite of the church. The same can be said for Jewish and Muslim fundamentalism.*

On miracles

Antony Flew's comments on the difficulty of demonstrating miracles (*SI*, Summer 1986) remind me of the manner in which, many years ago, I came to terms with the supernatural.

Simply put, if a phenomenon never occurs we need not concern ourselves with it. If it occurs, even if only once, it lies within the capabilities of the natural world and is, by definition, natural. Ergo, the supernatural cannot exist.

The same applies to the paranormal. As a scientist I am forced from time to time to amend my picture of what constitutes "Nature." What Flew refers to as the Basic Limiting Principles are constantly changing. Any phenomenon whose occurrence is demonstrated cannot be paranormal.

If treason succeeds then none dare call it treason.

Tom Napier
Dresher, Pa.

Animal language

"Animal language" is not an appropriate subject matter for a journal that deals with claims of the "paranormal" and with other fringe science. The evidence of communication between humans and appropriately trained (appropriately experienced) members of some other primate species is at least as good as the evidence for communication between

humans and very little children. Kids grow up and can persuade even Dr. Sebeok ("Clever Hans Redivivus," *SI*, Summer 1986) that they use language. Chimps do not.

The issue is not between "fact and fiction" as Dr. Sebeok would have it, but between his choice of definitions of "language" and the more empirical ones of the investigative scientist. These very special definitions and conceptualizations enable Dr. Sebeok to classify those who "believe in the ascent of animals to human society" together with those who believe in ETs and UFOs. By the same kind of reasoning, we can safely classify him as a creationist, hostile to the theory of evolution.

You might take a skeptical look at Dr. Sebeok's interpretation of the results of the Gardners, Fouts, Premack, and the Emory group. It would be naive to assume, and wrong-headed to insist, as Dr. Sebeok does, that the results of these investigations could be instances of "Clever Hans" phenomena and that the researchers were ignorant and took no precautions.

This is not to say that some *other* "research" on primate communication has not been incompetent or irresponsible, or both.

William S. Verplanck
Prof. of Psychology, Emeritus
University of Tennessee
Knoxville, Tenn.

I liked the Sebeok article and agree Clever Hans was a well-trained animal that could, with the help of a trainer, make people believe it could think.

However, I believe there is evidence that chimpanzees can use language. People once believed chimps had vocal cords that could not produce the sounds of speech, but they were able to teach chimps Ameslan, a sign language used by the deaf. Chimps were able to make the correct sign for many objects and were also able to make up Ameslan sentences containing the correct grammar.

I am convinced chimpanzees are capable of using language to communicate with humans, but that is only one part of intelligence. I also believe more is needed before an animal can be considered to have the qualities we associate with humanness. Carl Sagan speculated in *The Dragons of Eden:* How smart must a chimp be before he should be given what are considered to be "human rights" and what properties must a chimp have before killing one consists of murder?

Samuel Bauserman
Huntington, W. Va.

Thomas Sebeok's "Clever Hans Redivivus" is not up to your usually high editorial standards. After a three-and-a-half-page homily on the well-known Clever Hans case and the pitfalls of "scientific" self-deception, Dr. Sebeok spends half a page assuring us that modern ape language experiments resemble paranormal research in "numerous and significant particulars." No such particulars are ever mentioned. What exactly is being reviewed here? What particulars are being addressed?

Rusty Scalf
Huntington Park, Calif.

Thomas A. Sebeok replies:

Dr. Verplanck's thoughtful letter merits a measured response; but, alas, in the interests of conciseness, I must limit myself to two quotations, plus a reference.

1. My fellow linguist Noam Chomsky wrote, in 1980, that the discovery of language in other species than ours "would constitute a kind of biological miracle." I think most objective inquiries would concur that alleged miracles demand extreme skepticism.

2. Nobel laureate Konrad Lorenz declared, in 1978, "that syntactic language is based on a phylogenetic program evolved exclusively by humans" and that

"anthropoid apes . . . give no indication of possessing syntactic language." I know of no evidence to the contrary.

3. I have discussed all of the issues Verplanck raises, in a series of books, the latest of which has just appeared under the title I Think I Am a Verb *(Plenum Press, 1986). The quotation from Chomsky occurs on page 191; the one from Lorenz on page 207; and further references to my other writings on the subject on pages 232-233.*

Mr. Bauserman is mistaken in his belief that any chimpanzee (or gorilla or orangutan) has ever been taught Ameslan. The truth is that the so-called signing apes were drilled in but a minuscule number of "signs," simplified to the point of mere caricature and with an alien syntax superimposed on that rich and complex natural language. Some prominent psychologists (e.g., H. J. Terrace, the author of Nim, *1979) have denied that the subjects have ever mastered any signs at all.*

Mr. Scalf's complaint, that I did not enumerate the "particulars" alluded to, is puzzling, for that was not my intent. The topic of my short essay was to exemplify Elizabethan manifestations of what centuries later came to be known as the Clever Hans effect and fallacy. This notwithstanding, let me now assure him that the "particulars" he calls for will soon be forthcoming, in another publication.

More on belief scale

I would like to add some information to a comment in Paul Woods's letter (*SI*, Summer 1986). The item "ESP is an unusual gift that many persons have and should not be confused with elaborate tricks used by entertainers" is from the Belief in the Paranormal Scale and should be attributed to Jones, Russell, and Nickel (1977). Although I used it in my item pool in developing the 25-item Paranormal Belief Scale (Tobacyk and Milford 1983), it was not selected for inclusion among my final 25 items.

Although its wording is improvable, Jones, Russell, and Nickel (1977) report satisfactory psychometric properties for the item, which resulted in their including it in the Belief in the Paranormal Scale, and according to the author the item has significantly distinguished believers in the paranormal from nonbelievers ($p < .05$) and shows satisfactory item-full-scale correlations (.54 and .74 over two occasions). Further, Jones, Russell, and Nickel (1977) provide impressive support for the reliability and validity of the Belief in the Paranormal Scale, which includes this item.

This item showed a moderate relationship to the "Psi Belief" factor in my research. It was not selected from the pool to represent "Psi Belief" in my 25-item Paranormal Belief Scale only because several other items showed even stronger psychometric and statistical properties.

Thus, granted its inadequacies at the content level (e.g., awkwardness, a double-barreled quality, ambiguity), it still shows statistical and psychometric properties that appear quite satisfactory as a measure of paranormal belief.

Jerome J. Tobacyk
Assoc. Prof. of Psychology
Louisiana Tech University
Ruston, La.

Jones, W., D. Russell, and T. Nickel. 1977. Belief in the Paranormal Scale: An objective instrument to measure belief in magical phenomena and causes. *JSAS Catalog of Selected Documents in Psychology*, 7: 100.

Tobacyk, J., and G. Milford. 1983. Belief in paranormal phenomena: Assessment instrument development and implications for personality functioning. *Journal of Personality and Social Psychology*, 44: 1029-1037.

Holistic medicine

I am not so thrilled with the book *Examining Holistic Medicine* as your reviewer (*SI*, Summer 1986). I find much of it valuable and informative, but there are lapses that leave me desirous of a

fuller treatment.

I am thinking specifically of Edmund Crelin's chapter on chiropractic. Though Crelin does an excellent job explaining the deficiencies of chiropractic theory, he does not explain why chiropractic works at all. I have met several people who claim to have gotten immediate relief from a visit to the chiropractor who would insist that the chiropractor is doing something right regardless of theory. Most of the endorsements seem to revolve around problems with tight muscles, and it may be that chiropractic's most useful role is as a form of physical therapy. I think if we could discover what chiropractic was doing right as well as what it was doing wrong, if we could separate the wheat from the chaff (so to speak) and legitimize it in a readily available and inexpensive form, society would be better served than by publishing merely negative criticism. Most people, after all, will not respond to negative criticism unless a constructive alternative is offered.

Chuck Holst
Minneapolis, Minn.

Frog-in-rock cases

Robert Sheaffer's oddly titled "Psychic Vibrations"—which has no vibrations and nothing psychic in it—should be studied by debunkers who wish to learn the best way to quote something out of context. Sheaffer (Summer 1986) neglects to mention that I gave the orthodox explanation for frog-in-rock cases immediately before I said, "This unique three-in-one case strains coincidence. . . ." The quote does not refer to my beliefs, as he presumes, but to the orthodox explanation, which, to state the point explicitly, cannot be applied to the case under discussion. (The case may be a complete fabrication, of course, a possibility that should comfort many people.) Sheaffer's presumption that I am "not too troubled by a single rock-entombed flattened frog" gets it backwards. I *am* troubled by such cases; it is the automatic debunkers who are not so troubled, because they have the orthodox explanation handy whenever something odd appears.

Michael T. Shoemaker
Alexandria, Va.

Robert Sheaffer replies:

I did not quote the two sentences preceding the "strains coincidence" line in my piece. They were: "Many cases of frogs and toads found in rocks have been recorded. The usual explanation is that the creature crawled into a cavity when young and grew too big to escape. This unique three-in-one case strains coincidence. . . ." Thus when I say that Mr. Shoemaker is not too *troubled by a single rock-entombed frog, but he says he is, what I think he means is this: He is troubled by them in the same way that Charles Fort was troubled by the coal and cinders alleged to fall from steam-powered aerial super-contraptions made by powers unknown. We skeptics are not troubled by reports of rock-entombed, flattened, but living frogs, he says, because we disbelieve them. He is troubled by even one such report because he believes it may be authentic, so imagine his distress in trying to deal with three such frogs that puff themselves up and hop away.*

Astrology columns

The update (*SI*, Summer 1986, p. 299) on the number of newspapers that have adopted the CSICOP astrology disclaimer was profoundly disappointing. That only 6 newspapers, of the 1,200 that received letters requesting the disclaimer be used, have in fact adopted it is a piece of data all readers of *SI*, and indeed all observers of American journalism, must ponder seriously and with apprehension.

Are we to assume that there are 1,194 executive editors in America who themselves are believers in astrology? Or are they all skeptics who do not have the moral fortitude to express their views via

the CSICOP disclaimer? Presumably the truth lies somewhere in between. But if, for example, half are believers, we are seeing a situation far more serious than any of us would have believed.

I suggest that we seize the initiative and launch a person-to-person campaign enlisting the entire *SI* readership to persuade local editors to adopt the disclaimer.

Our best allies are local astronomer groups. Treat your editor to a visit to a local observatory or planetarium and enlist the local science-teaching community in the effort. Remind your editor that he is asking his readers to give the same credence to the astrology columns as to his news and editorials if he does not adopt the disclaimer. Let us launch Operation Reason, whose ultimate goal is to put astrology where it belongs—in the dustbin of history. And, remember, your local minister may be a helpful source of support for your campaign. The Judeo-Christian tradition has long decried astrology as vigorously as has the scientific community.

Lawrence Cranberg
Austin, Texas

Editor's note: Newspapers publish astrology columns not because their editors believe in them but because their readers want them, just as readers want countless other features—from serious to silly—that newspapers run. As a journalist myself, I submit that newspaper editors are very independent sorts and take great pride in resisting pressures, from whatever direction. One needs to work with them, not against them. A positive approach is much more likely to be successful than a negative one.

Violence and D & D

A letter to the editor by Jefferson Swycaffer (*SI*, Summer 1986) attempted to explain away the 28 suicides (now 32) that have been linked to Dungeons & Dragons play by, unintentionally, misrepresenting the facts. No retroactive study has ever been done to compare the suicide rate of D & D players with nonplayers as implied by Mr. Swycaffer. Our report on CBS's "60 Minutes" did not claim that these 28 deaths were the total number of suicides committed by D & D players.

Epidemiologic studies can be made of illnesses in manners other than purely statistical. We have visited families of the deceased and testified at four D & D murder trials. We have gathered reports from non-death-related D & D violence, including rape, attempted murder, and theft cases. We have examined the diaries and writings of suicide victims and murderers and carefully interviewed the murderers themselves.

The results of our study found many instances where the intense, sadistic violence, common in D & D role-playing, had markedly increased fantasies of killing other human beings. In several cases the murderers told us that their killing actions came directly from D & D materials. In suicide cases we have multiple instances of suicide notes and diaries carefully detailing the increase in violent fantasies, linking these to D & D role-playing, and detailing the reasons that they were killing themselves. In another case, a suicide was actually an attempt to replicate D & D astral-traveling.

We have asked for a careful hearing by the Consumer Product Safety Commission to examine the more than 60 homicides and suicides that have now been linked to fantasy role-playing violence. We welcome any study looking at the rates of violence and suicide in FRP players compared with nonplayers. However, that type of epidemiologic study would far exceed our financial abilities. We have asked the U.S. government to fund a $50,000 study of that type, but have gotten nowhere.

We have surveyed ten leading aggression researchers on the issue of the likelihood that violent fantasy role-playing material would increase the tendency toward violence in players. Nine out of the ten thought that our current research knowledge of violent entertainment al-

lows us to state with a high degree of certainty that violent FRP play is likely to increase one's desensitization to violence and increase the tendency in normal players to respond to frustration with anger and violent behavior in real life. This certainly does not mean that every D & D gamer will commit murder or suicide. The most likely effect is probably a somewhat increased tendency to get angry in everyday life and a somewhat decreased tendency to protest violence and war in the world around us.

Thomas Radecki, M.D.
Research Director
National Coalition on
Television Violence
Champaign, Ill.

Condon UFO study

I would like to make a few observations on Philip Klass's article on the Condon Report (*SI*, Summer 1986). Those familiar with Klass's treatment of data know what confidence to place in his objectivity regarding the Condon affair. I personally find it interesting that Klass, who prides himself on his powers of detection, doesn't seem to know the means by which the Condon Report got a clean bill of health from the National Academy of Sciences, a move that largely nullified the negative impacts of the Low memorandum, at least for the scientific community. For someone so concerned about public appearances, this is a strange omission.

What the Condon Report did do—or rather its introduction, by Condon himself—was to keep UFOs out of the press during the period 1968-1973. It was during this time that magazines printed articles with titles like "Where Have All the UFOs Gone?" The Condon Report, and this is very important, also provided an excuse for government, science, and ordinary citizens to stop looking into UFO reports. The overwhelming impression of the educated public was that science had looked into UFO reports with adequate methods *and had found nothing there.* I myself remember hearing about the Condon Report, took its conclusions seriously, and decided there must be nothing to the subject.

Now, years later, having read the report myself and the sources to which Klass refers in his article, the Condon project still makes me angry. It was not, in fact, good science. There are parts of the report that are valuable—largely the case studies and the social science parts. But for the most part it represented an incredible waste of hundreds of thousands of dollars. I invite anyone to compare Allan Hendry's *UFO Handbook,* which cost a fraction of the Colorado project's budget, with the Condon Report and tell me which represents a serious investigative effort, useful data, and facts useful to know if one is going to investigate UFO reports.

Anyone who has worked on a large scientific project will immediately upon reading the Condon Report know what was wrong. Each part of the team acted in complete lack of coordination with other parts of the team. Thus Condon could write an introduction that had very little to do with the actual results of the investigations. The one table he presents (with several errors of addition) has almost nothing to do with any of the research, and less to do with science. "Rounding up the usual suspects" is not an appropriate approach to a complex scientific problem, and the negative results of the study simply confirm the complete lack of imagination with which this problem was pursued.

Ron Westrum
Professor of Sociology
Eastern Michigan University
Ypsilanti, Mich.

Philip J. Klass replies:

If Westrum will reread the opening page of my article more carefully he will find: "I cannot endorse the Colorado investigation as having been well managed. . . . But under the circumstances, I doubt that anyone could have done much better."

If Westrum has evidence that there

was any impropriety in the panel created by the National Academy of Sciences to review the Condon study, as he insinuates, I urge him to promptly bring such evidence to the attention of the NAS or publish it. Westrum also makes an insinuative attack on my "treatment of data," but fails to document his charge with specifics.

In the nearly 20 years since Condon published his conclusions on UFOs, neither Westrum nor his fellow UFO-proponents have been able to come up with an iota of scientifically credible evidence to challenge Condon's conclusions.

As for my objectivity on UFOs, I am content to leave the judgment to posterity. Westrum hardly qualifies as a neutral observer considering his position statement that "UFOs may or may not be extraterrestrial spaceships. Actually the question is of little importance, for it is obvious that the intelligences which direct them are technically far more advanced than we are. . . ." (The Encyclopedia of UFOs, *edited by Ronald D. Story*).

'Bleeding statue' hoax

As a subscriber to the SKEPTICAL INQUIRER, and as someone who has been "used" in a most unethical fashion either legal or journalisticwise by your contributor Robert S. Carswell ("The Hoax of the Bleeding Statue," News and Comment, Summer 1986), I wish to set the record straight.

Your columnist reports on my comments in a Montreal local newspaper in the following fashion:

> On the other hand, Professor Louis Bélanger, a psychologist at the Faculty of Theology of the University of Montréal, urged people to approach the phenomenon with open minds, "as if it were true," according to the *Journal de Montréal,* and added that it was possible that it might be a paranormal event or one caused by God or Satan.

Obviously, Mr. Carswell has deliberately omitted important parts, such as those italicized below, from the *Journal de Montreal* quotes. These were summed up in this way in the lead paragraph of the abovementioned daily:

> *"It's possible that this is a truquage,* a phenomenon originating from God or Satan or from the realm of the paranormal. *All possibilities have to be considered* and one must keep an open mind *and observe, at the start, the 'as if it were true' attitude without failing to approach all that in the most rigorous manner."*

The journalist's summary receives my approval for most of its content with the exception of her allusion to "God and Satan," which referred, in reality, to an opinion that, as I had specified in our interview, originated among some of the local residents (and not my own personal opinion).

The sensational news fiddled by your contributor journalist with the hope of making an unfortunate scapegoat sacrificed to the triumphant and skeptical gallery, out of a seemingly naive sheep, has thus fizzled.

Attorney/journalist Carswell and some of his colleagues both at the bar and at the newsbench could profit from the conclusion by an analyst in a report of a respected Quebec firm dealing with mass-communication research:

> Throughout all this event, journalists and medias seem to have helped themselves by feeding the growth of the phenomenon and through the latter favoring the consumption of news. Later, these very people kept the leading role for themselves through debunking the myth of the miracle they had a share in creating or at least in amplifying.

Louis Bélanger
University of Montreal
Montreal, Canada

See also "Bleeding Statue Update," this issue, p. 125—ED.

That dark and windy night

Unlike Poe's concession in his sonnet "To Science," I will not allow you to drive my hamadryads from the wood.

I've been reading your publication since December and you sound for all the world like little boys reassuring each other in the dark.

Oh, I know that there is probably nothing "out there," but it's such fun on that dark and windy night to imagine that there is.

William H. Sapp, Principal
Campobello Gramling School
Campobello, S.C.

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